FEBRUARY 1961

THE Airman

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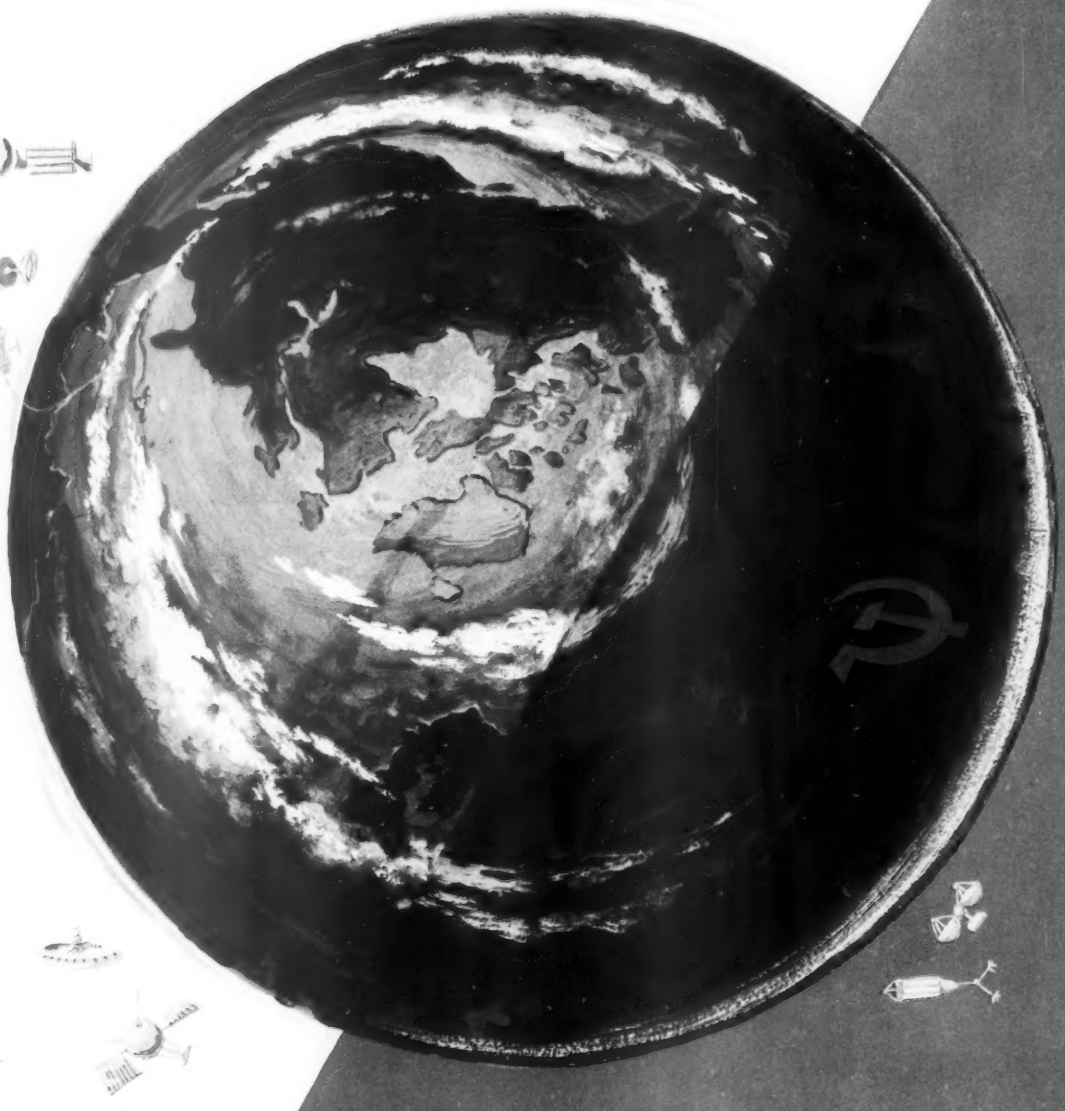

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KEY CHARACTERISTICS OF THE COMMUNIST THREAT
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on the ground and in the air

professionalism means

ACCOMPLISHED MISSIONS

THE Airman

OFFICIAL JOURNAL OF THE AIR FORCE

Volume V, Number 2 February 1961

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THE AIRMAN is primarily a medium for the exchange of ideas and information among Air Force personnel. Readers are encouraged to submit articles, short subjects, photographs, and artwork.

Missing Buddy

Sir: I would like to thank you for the fine tribute which appeared inside the back cover of your November issue. The missing buddy formation, flown by the wing-mates of my twin brother, Maj. Willard G. Palm, represented their final acknowledgment of his contribution to the maintenance of world peace.

Warren A. Palm
Dayton, Ohio

Sir: The men of this organization were most proud to see our aircraft featured inside the back cover of your November issue. Although the story accompanying the picture makes no reference to it, the flyover was in honor of Maj. Willard Palm, an aircraft commander of the 55th Strategic Reconnaissance Wing, who was shot down and killed over the Barent Sea. The wing commander would like to send this photo to the families of the other crewmembers if you can provide the negative.

Capt. William Hayes
Forbes AFB, Kans.

★ ★ ★

Thank You

Sir: Please allow me to express my thanks to you for the excellent publication you edit. Having a love for flying, I bought just about every publication on the market without finding as much material about our first-line Air Force as I would like to have. Recently, I happened upon a copy of

(Continued on page 38)

Key Characteristics of the Communist Threat

by Charles E. Bohlen
Special Assistant to the Secretary of State

The threat posed by international communism consists of more than the possibility of military conquest. The communist tide presses forward continuously along scientific, political, economic, and psychological avenues.

Few Americans are as well qualified to discuss the key characteristics of communism as the author of this presentation, Mr. Charles E. Bohlen, career Foreign Service Officer presently assigned as Special Assistant to the Secretary of State. Mr. Bohlen's first assignment to Moscow dates back to 1934, and he is recognized as an authority on Soviet affairs and the philosophy underlying communist goals. He served as United States Ambassador to the Soviet Union during the critical period following the death of Stalin, during the years in which the present Soviet administration formulated and solidified its attitudes to the other nations of the world.

This article is adapted for THE AIRMAN *from a speech delivered by Mr. Bohlen; full text of the address appeared in the Department of State Bulletin, Vol. XLIII, No. 1113.*

IT IS necessary before discussing the present world scene and our relations to it to deal briefly with the theory and practice of communism, including a word on its historical origins and development. Volumes have been written on this subject, but I believe a few observations on this point are necessary in order to understand why communism enshrined in power in a number of countries in the world constitutes the greatest menace that this country has ever experienced since its founding. I shall only talk on those aspects of the origin and development of this doctrine which are of particular relevance today.

Marxism is a theory that developed in the middle of the 19th century, in large measure as a result of the impact of industrialization on the semifeudal societies of Europe at that time. It was a theory whereby the history of human society was explained solely in terms of the class struggle, that is, an irreconcilable conflict between those classes of society which own the instruments of production, described by Marx as bourgeois, and those who had no property and only their labor power to sell, described as the proletariat. It asserted that Marx and his associate, Engels, had discovered what they termed the scientific laws for the development of human society: that following the period of capitalism the proletariat, who, according to this theory, would become the overwhelming majority in any industrial society, would seize power, establish socialism, and proceed to construct a classless society under the "dictatorship" of the proletariat.

While in general during the latter part of the 19th century and the early part of the 20th these doctrines in theory were accepted by the majority of European socialists, the influence of the humanistic traditions of European civilization, as well as the development of capitalism itself, led to a considerable modification in practice of this theory. By the time of World War I the Marxian doctrine of the inevitability of violent revolution as well as certain other aspects of the theory had been modified so that by 1914 "social democracy," as it came to be known, operated much more on the basis of evolution through the process of democracy than on the belief of violent revolution.

Had it not been for the accident—and I mean the accident—of the seizure of power in Russia in November 1917 by a small band of revolutionary known as Bolsheviki headed by Lenin, it is very likely that in Europe, at least, communism would have continued to develop along the lines of social democracy and as such would have presented no real problem and certainly no threat to the United States. An example of this is the British Labor government in England or the Social Democratic governments in the Scandinavian

countries. However, Lenin and his associates, as dedicated Marxists, took as the basis of their action and beliefs this doctrine in its original, harshest, and more extreme form, disregarding, and indeed denouncing, the evolutionary trend which Western civilization had brought to it in the intervening period. The result of the impact of this Marxian doctrine on the war weary in the semifeudal empire of the czars in the hands of professional Russian revolutionary produced what in official jargon is called "Marxism-Leninism," or more properly "bolshevism." Bolshevism, in my opinion therefore, is a much more accurate description of the doctrinal aspect of the problem we face than the term "communism."

It is one of the ironies of history that power in Russia was seized not by a revolution in the true sense of the word but by a *coup d'etat* and by a group of fanatical followers of Marx in a country where the circumstances at that time contained none of the prerequisites which Marx had laid down for the establishment of a socialist society. It was a seizure of power by a minority representing considerably less than one percent of the people in Russia and far inferior in numbers to other political parties existing in 1917. No objective historian asserts that the Bolshevik regime in Russia was established in conformity with the will of its people. On the contrary, the Constituent Assembly elected previous to the Bolshevik seizure of power in the only free and universal election which Russia had known before or has known since was dissolved by Bolshevik bayonets precisely because these elected representatives of the people were overwhelmingly non-Bolshevik.

It is, of course, not its historical origin or the factors which led to the seizure of power in Russia in 1917 that make the Communist problem of particular interest to the United States in the 1960s. They are only relevant and important to the degree to which they have continued to exercise a controlling influence on its nature and development.

Role of Ideology

The fact that in Russia this doctrine was enshrined by a tiny minority is still a very important conditioning factor in its present form. In reality, although any Communist would deny it with utmost heat and passion, the theory of communism is no longer the central and vital factor in the movement. It is, of course, essential to have some understanding of the ideology and the particular role it plays in Soviet policy and in the attempt to extend Communist power to other countries, but I give it lower priority than other factors precisely because its powers of persuasion have greatly diminished in the postwar world.

Ideology is important in that it represents a body of thought conditioning the mentality of the Soviet leaders, affecting their choice of alternatives and reaction in a given situation. It also continues to be the honey that catches the flies abroad, although to a much less degree than, say, during the decade of the 1930s—during the period of the worldwide depression. It has another function, which I personally regard as perhaps its chief one, deriving from the assertion that Marxism represents a scientific analysis of the inevitable development of human society coupled with a denial of the existence of any objective standard of morality or ethics.

Ideology thus constitutes a permanent dispensation under which its followers are relieved from the observance of any standard whatsoever of morality, ethics, or fair play. This I assure you is very important. It permits, and indeed justifies, Communists to lie, deceive, and operate with a disregard of human suffering without undue violence to their consciences as human beings. They believe they are operating in accordance with the iron laws of history and that all, and quite literally all, is permitted for the achievement of Communist aims. Ideology, despite the extremely important role it plays, is not in my opinion among the controlling factors in its operation today. If it were and if Communists were prepared to submit their doctrine

Soviet government, as a central dictatorship, can divert industrial production to the development of national power at the expense of the people.

to the interplay in the free marketplace of ideas and sought merely to convince people of the correctness of their theory, they would not be in power anywhere in the world today. There is no instance when a Communist system has been consciously voted into power by any people in any country in the world. Therefore, without underrating the influence it does play, I believe other factors are more controlling.

These factors are power, discipline, and deception.

Power, Discipline, and Deception

It is the power of the Soviet Union and the growing power of Communist China that constitute the core of the menace we face. Under the centralized ruthless dictatorship of the successors of the tiny minority that seized power in Russia in 1917, the Soviet Union, always a country of great potentiality, has made remarkable advances in developing the sinews of state power. The fact that this is done at the expense of the Russian people with a total disregard for the rights of the individual, democracy, and freedom, should not blind us to the simple fact of the continued growth of Soviet power, both military and industrial. Although by all economic indices the Soviet Union is considerably behind the United States in all sectors of its economy, nonetheless the Soviet rulers have been and are able to divert more of their gross national product to the sinews of national power than we have. Therefore, in terms of power, a purely statistical comparison can be misleading. The same can be said, although at an earlier stage in its development, of Communist China.

To the reality of great and increasing national power —and I am speaking now only of the Soviet Union— should be added the fact that the same group of men that rules the Soviet Union also commands the obedience and services of a worldwide network of agencies —the Communist parties—which quite literally operate in every country in the world. In the countries of Eastern Europe, where the Communist parties have been installed by the Soviet armies, they control the governments. Despite the acquisition of government power these parties, with one exception—Yugoslavia, where the conquest of power was not due to Soviet arms— are still subservient to the dictates of Moscow. This network of parties does not constitute an international movement in the true sense of the word if by this we mean a free association of independent political parties bound together by a common doctrine. This is what the Soviets have consistently sought to depict these parties as being. In reality they are in the truest sense of the word obedient and subservient instruments of Soviet policy.

In short, the Soviet Government in addition to its own national power enjoys the great advantage of maintaining fifth columns in every country in the world. It is here that the second controlling element of the Communist organization and discipline is most clearly manifest. Since the original formulation of the Communist International, or "Comintern," as it was known, in 1919, the Communist parties of the world have become progressively subordinate in every respect to the will of the rulers of the Soviet Union. The Soviets, particularly under Stalin, did not seek to recruit members for Communist parties for reasons of ideological belief —indeed there are many evidences that the idealist is deeply distrusted—but rather disciplined soldiers who would carry out unquestionably the orders received from above.

It is because of this tight, disciplined organization of the Communist parties that the Soviet Union has been able to command the consistent chorus of support in words and deeds for any one of the zigzags of Soviet policy no matter how contradictory. It is also the reason why the Soviets have been able to utilize for espionage purposes citizens of other countries. While technically the Comintern, or its postwar successor in Europe, the Cominform, no longer exists, the basic form of organization and subservience to Moscow has remained unchanged. It is in recognition of this fact that the law of the United States makes membership in the Communist Party a criminal offense while imposing no legal sanctions whatsoever in conformity with our Bill of Rights against individuals or groups who may be interested or even attracted by Marxian ideology as such.

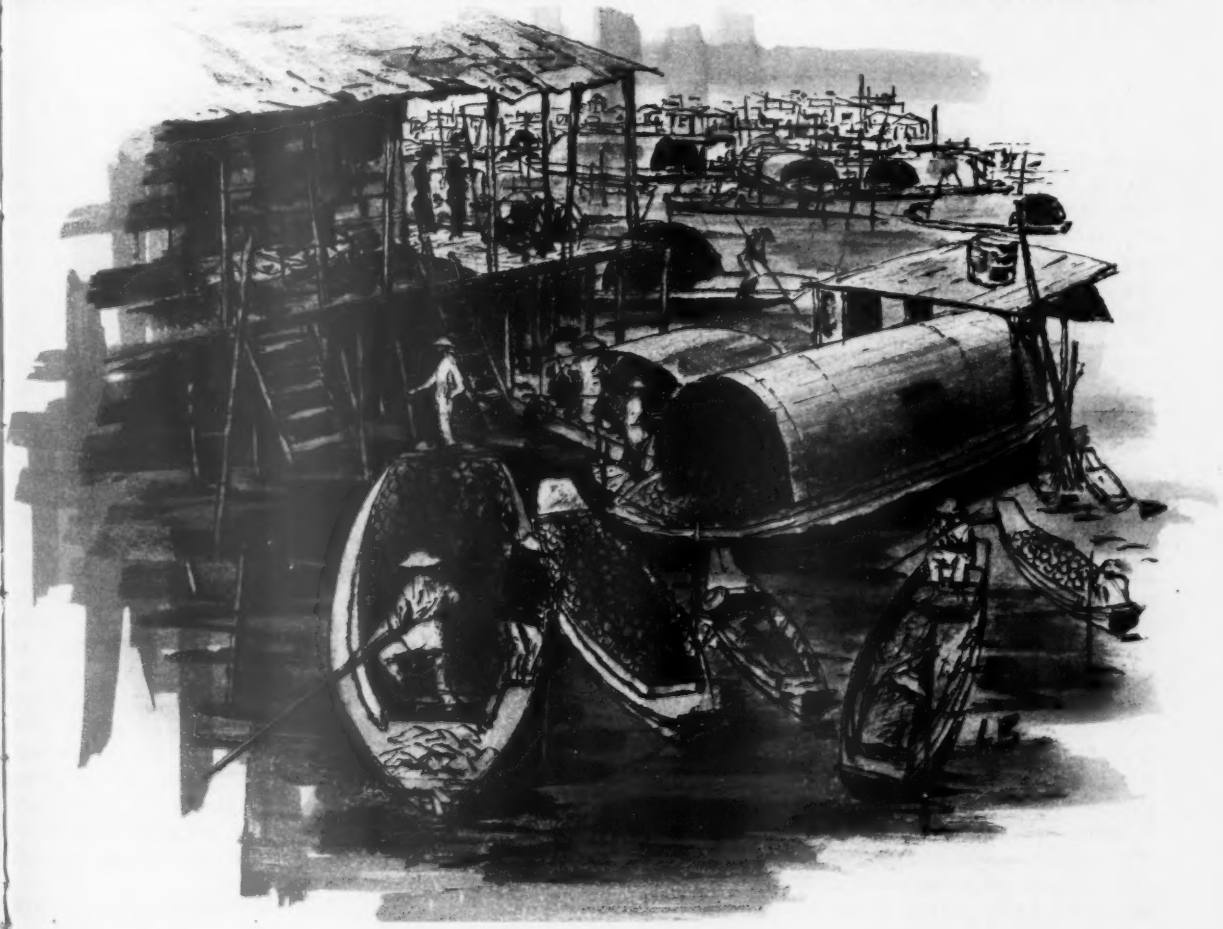
The third factor to which I think importance should

be attached is that of deceit. In effect the use of deception stems logically from what I have said before. Since Communist ideology in most countries has limited popular appeal, it is not used to extend Soviet power and influence. The true aims of the Communist Party have been masked under the guise of other causes and purposes. The wide development of what is termed "front organizations" is a clear evidence of this fact. This does not mean—and I do not wish to be misunderstood on this point—that any group or individual supporting such popular causes is Communist influenced or should be placed in the category of Communist sympathizers. I merely state that Communist parties find it necessary now because of the lack of appeal of the open propagation of their ideas very often to conceal their activities under many guises. In its international relations, likewise, the Soviet Union has not in recent years as a government openly supported the local Communist parties. Rather it will seek to enhance its influence and control by other methods. For example, in the newly independent countries the Soviet Union poses as the champion of anticolonialism.

The ultimate aim everywhere remains the installation of the Communist power, but Soviet policy being highly flexible in many areas of the world may well consider its interests best served by genuine support at the present world juncture of non-Communist movements or countries. Their chief purpose at the present time is to disrupt wherever possible the cohesion of the free world, and they support the concept of neutrality as a means of weakening or disrupting the collective security measures of the free world.

I might add on the subject of neutrality that, while it is, of course, up to each nation to decide the course of its foreign policy, neutrality in the sense of nonparticipation in military alliance is a perfectly responsible posture and one which we from our history should recognize as such. Neutralism in a sense of pretending to be indifferent to the gigantic struggle which is going on in the world today is quite another matter. I might, however, add that while the Soviets and their Communist adherents support neutrality wherever it can weaken the Free World they do not accept it ever in connection with the Communist bloc. The tragic events

Outcome depends largely on success of Free World policies regarding the underdeveloped nations.



in Hungary in the fall of 1956 are bloody and eloquent witnesses to the truth of this statement.

Communist Aims

A few words on the subject of Communist aims. There is no subject that is more difficult to assess in its true value than this one. The doctrine by its very terms is worldwide in its application, and in this sense the entire world is its objective. On the other hand, the history of the Soviet Union has demonstrated that it regards with hostility and suspicion any system whether Communist or not that it does not guide and control. I would seriously doubt that the men in the Kremlin believe as a practical matter that they could exercise control over a Communist world. Here you have an interesting but not necessarily important contradiction between the universal applicability of the theory and the Kremlin's insistence upon domination of the movement.

For our purposes, however, I would submit that it is irrelevant whether the Soviet ambition is to dominate the whole world or merely to dominate a sufficient part of it to exercise a dictatorial and controlling interest in world affairs. If war comes, an event which we must all devoutly hope will not occur, it will in my opinion not be because of the global aspirations of the Communist leaders but over some aggression by Communist armed forces against the Free World at any point on the globe where the frontiers of freedom and Communist dictatorship meet.

I have thus briefly touched on the ingredients which seem to me to constitute the nature of the menace we face. I am sure from this you will agree that at the present time the danger is primarily one from abroad, one primarily based upon Soviet and Chinese Communist national strength uninhibited by any considerations of morality or ethics in their single-minded pursuit of power, and reinforced by a disciplined network of fifth columns. While, as I have indicated, ideology is a vital part of this process, we should not be deluded into the belief that the possible intellectual appeal of Communist doctrine is the major danger we face. If this danger must be summed up in one word, I would say it is power.

This naturally presents us with what we, the United States and its citizens, must do in the face of what is unquestionably the greatest challenge to our country, our society, and our civilization that we have ever faced since the founding of this Republic. Time will not permit me to go into every aspect of what is necessary to meet this challenge. I am sure, given the ruthlessness of our enemy, no one would disagree with the statement that the United States and its associates in the Free World cannot tolerate a Soviet superiority in military power. I do not wish to imply that the problem of military aggression is the only one we face. Far from it. But certainly without a continued margin of military superiority all other efforts will be unavailing and our survival as a nation and those of our partners in the Free World would exist at the sufferance of dictators who have never shown the slightest restraint

except fear of the consequences in the exercise of military power.

Secondly, our society must be strong and vigorous and must continue to demonstrate to the world that national purpose, economic growth, and social progress flourish but in freedom, and outmatch in any area of human society the Communist dictatorships.

Lastly, and this is particularly fresh in my mind coming as I do directly from the present session of the General Assembly of the United Nations, the battleground between the two conflicting concepts of human society may well be in what is generally called underdeveloped countries of the world. This is a general term which is frequently abused, but in essence it means those countries that for one historical reason or another have not made the economic and technical advances which the older industrialized countries have made. They also comprise, in particular, countries whose independence has been recently achieved and which indeed in some cases can be measured in months. This problem, vast in its dimensions, will pose for the Government and the people of the United States a challenge in the true sense of that overworked word. It will require economic and technical assistance from us for which we propose, as you will have seen from the President's speech of September 22 before the General Assembly, to utilize to much greater extent than in the past the facilities of the United Nations. In addition to material and technical assistance this task will require from us a very great exercise of imagination and understanding.

We will have to recognize that no system of society, however successful it has been at home, can be automatically transferred abroad. Nor should we expect that the consciousness of our own virtues, however brightly they might shine against the Soviet record in world affairs, will be automatically accepted as such by foreign countries.

I would venture to predict—which is of course a foolish thing to do—that the outcome of the great struggle now in which we are engaged will in large measure be decided on the success or failure of the policies of the Free World in regard to the underdeveloped nations. This struggle, erroneously stated by the Communists to be one between communism vs. capitalism, is really the age-old struggle in a most dangerous form between freedom and tyranny.

FROM SADDLES TO SATELLITES

A military career can be measured in terms of time. Or it can be measured in technological accomplishments. Certain types of airmen have compressed time and technology into a new Aerospace Force.

by SMSgt. Edison T. Blair, *Airman Staff*

THERE were no distracting windows in the room with restful green walls. The peaceful quiet was broken only by the pencil scratchings of a shirt-sleeved man who propped his head with one hand. Unable to understand any of the reading material within reach, R. I. Anam* almost dozed nearby.

"Hey! You guys know what time it is?" shouted a balding individual from the back desk. "You gonna stay here all night?"

Startled, Anam glanced guiltily at the 24-hour clock above the blackboard by the door. The clock indicated 1800. Jumbled figures and Greek letters covered most of the blackboard. In the center was a rough drawing of what appeared to be half of a quarter section cut from a huge clear plastic globe that rested in a rack on the floor. Apparently the figures indicated something too, because across the top of the blackboard was chalked: "orbital period equals 94 minutes."

The man with the pencil—his blue badge read Maj. John Hatch—hurriedly gathered up several sheets of yellow scratch paper covered with more mathematical formulae. He mumbled something like "told wife ummm early tonight" as he stuffed the papers and a red-backed book titled *Spherical Trigonometry* into a briefcase. Over his shoulder as he headed for the tangle of traffic on the South San Francisco Peninsula he told the room in general, "That computer was right. I've got this problem licked now."

"You too," another man who looked up from a classified paper was told. "Have to chase 'em home every night," Maj. Vernard Webb explained to Anam.

*A fictitious individual reporting BMD activities for THE AIRMAN.

"If I didn't know better, I'd think they were married to their desks." Still talking, Major Webb pulled on his own civilian jacket with the Boy Scout Commissioner's emblem in the lapel.

Webb is chief of the Evaluation Branch of the USAF Satellite Test Center. The Center is what would probably be called Wing Operations in an ordinary Air Force wing. But the 6594th Test Wing (Satellite) in Sunnyvale, Calif., is no ordinary wing. The Satellite Test Center cost $2.2 million—not just the building—the building and equipment. Pieces of the equipment are like the wing itself, the only one of its kind and made to order for a special purpose.

When Anam first arrived he noticed that the 6594th Test Wing isn't even on an Air Force base. Headquarters is hidden behind a maze of corridors and stairways inside of what looks like a modern factory. It is a factory. It belongs to Lockheed Space and Missiles Division (LSMD), just like a sign outside says. They build *Agena* satellite vehicles. Depending on the payload, an *Agena* can become a *Discoverer, Midas, Samos,* or what-have-you satellite. The Air Force-owned Satellite Test Center is across the road on land dedicated to the Air Force by LSMD.

In military jargon the 6594th TW is "the element of the Air Force Ballistic Missile Division, Air Research and Development Command, devoted exclusively to earth satellites." That means, Anam learned, that they support the civilian contractors who are developing and testing the aforementioned systems.

There was no air policeman on the gate, just a pretty receptionist in the lobby. Anam would have stopped there if he hadn't been on pretty good terms with the commander's secretary. Even after he showed the receptionist his official letter of introduction, she made a couple of phone calls mentioning his name and pedigree before she dubiously issued him a badge. He got three steps toward the corridor she indicated before a sharp-eyed civilian guard stopped him. The guard suspiciously compared the signatures on the badge and ID card, commented on Anam's need of a shave when his ID photo had been taken, and had just started telling Anam about a diet that would help him look more like the photo when the colonel's secretary rescued him.

That's the way it is supposed to be. Although the guard is a Lockheed employee, he is also in cahoots with Col. Fredric E. Mau, the Wing Security Officer. When he wears his other hat, Colonel Mau is the Provost Marshal, but that doesn't take much of his time. Character is an important factor in people selected for assignment to Ballistic Missile Division (BMD). All are carefully picked. If you plan to visit the Sunnyvale complex or any BMD installation, have the boss send a TWX to tell them you are a good security risk.

In support of satellite contractor airmen gain operational experience.

experience, knowledge, and fall-out . . .

COL. ALVAN N. MOORE commands the 6594th TW. Anam found the colonel a relaxed, quiet-mannered man who speaks directly and forcefully. He keeps the work on his desk in neat piles and his pockets are full of notes with pertinent information. He helped organize Strategic Air Command, then helped it grow up doing staff jobs and commanding bomb wings. He prepared for the SAC job by flight testing B-29s early in WW II before he went to India and flight tested them against the Japanese. He prepared for the present job by serving as deputy commander of Seventh Air Division. He ran the SAC Control Center there, helping Great Britain's RAF install its *Thor* missile bases.

ARDC's boss, Lt. Gen. Bernard A. Schriever, recently elected Colonel Moore to a very exclusive club, the Aerospace Primus, because the 6594th was the first unit to recover an object intact from space. Other Aerospace Primus members, Capt. Harold E. Mitchell and his C-119 crew of the 6593rd Test Sq. (Special), actually snatched the *Discoverer XIV* capsule in mid-air. A couple of months later, a squadron-mate, Capt. Gene Jones, grabbed *Discoverer XVII* the same way.

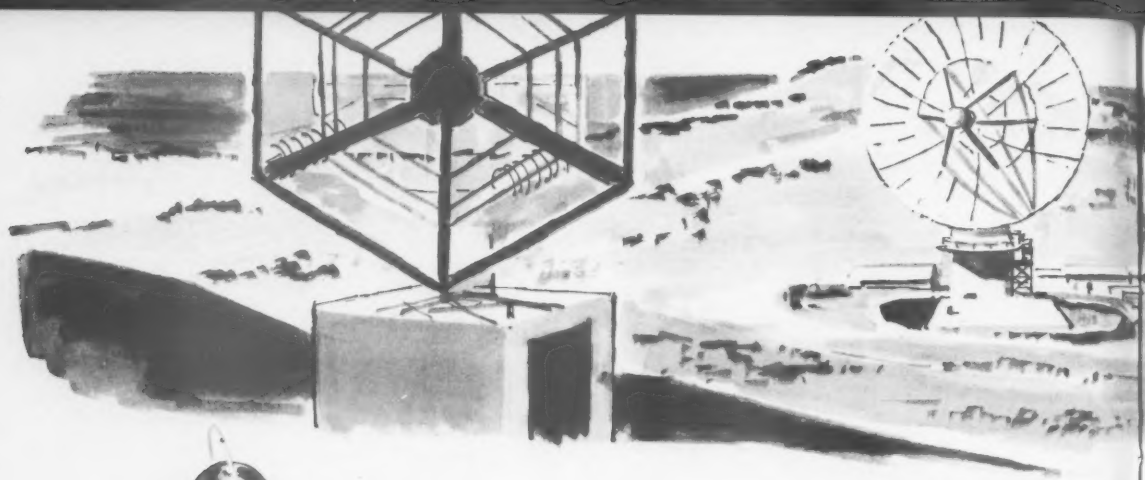
Colonel Moore and his deputy for Systems Development Test, Col. Preston C. Newton, spent two and a half days at the control console across the street in STC during the *Discoverer XVII* test. They watched with agonizing tension the satellite's response to their orders; watched it adjust its orbit; then eject the capsule when they gave the word. From time to time during the ordeal they consulted the "scientific community" in the next room. The vehicle was the brain-child of these scientists and they were the "300 mile screwdrivers" who electronically adjusted the satellite in its orbital mission.

The C-119 squadron and the 6593rd Instrumentation Sq. make up the wing's 6594th Recovery Group in Hawaii. The birds were launched by the 6594th Launch Sq. and tracked from lift-off by the 6596th Instrumentation Sq. at Vandenberg AFB. Besides these units there are the 6594th Instrumentation Sq. at Manchester, N. H.; an Operating Location at Edwards AFB; and another Operating Location on Kodiak Island, Alaska. The sensational capsule recoveries were the result of excellent teamwork by all these units plus the able help of an airborne AC&W squadron and several Navy ships. The 6594th TW operates over a quarter of the earth and 300 miles into space.

Colonel Moore leaves the impression of being a down-to-earth, practical man who is not blinded by the new stars he controls in the sky. He feels that the wing's job is to test and evaluate new satellite systems. But the carefully calculated fall-out of experience and technical knowledge will be firm stepping stones for future aerospace operations. Thus, while supporting the contractor, Colonel Moore pointed out, his outfit is developing a real Air Force capability to operate satellite systems whenever they become operational.

Coffee and consultations help break control room tensions.

More coffee, more consultations, more tension in the control room.



shoulders, togetherness . . . and learning . . .

MOST of the blue-suited people who work for Colonel Moore fall into one of two types. They are either integrated with the civilian technicians who operate—launch, track, and control—the satellites, or they are young engineers who manage the overall test project. This helps to accomplish what Maj. Gen. O. J. Ritland, AFBMD Commander, calls "concurrency." TV detectives call it the "M. O.—*modus operandi*" or method of operation. Concurrency is more than a word in AFBMD, it is a religion. It means that they apply research ideas, develop components, manage the manufacture and assembly of systems, and train the people to operate the whole, all at the same time. It is a method they have for compressing time and stretching technology.

The integration phase begins with officers and airmen who have completed technical training in their specialty and usually factory training on the equipment. At first they look over the shoulder of the civilian technician assembling, instrumenting, or tracking the bird. Later they do the job with the civilian watching. Soon military and civilian are working side by side with each doing a part of the job. This is the Category II joint Air Force-contractor relationship dealt with in AFR 80-14.

"There are no walls between our people and the contractor," Lt. Col. William C. Bumm, Wing Exec and special assistant to the commander, told Anam. Bumm was assigned to the Sunnyvale Complex in 1958 when AFBMD first established a Field Office there. (Although BMD has numbered Air Force status, it consists largely of detachments and field offices, and has only three wings. The 6565th Test Wing is at Vandenberg AFB and the 6555th Test Wing at Patrick AFB.) Colonel Bumm has remained in an administrative job with the original Sunnyvale organization as it evolved through a Systems Test Working Group into a wing.

"Some of our problems were unique," he said, "but we whipped them as they came up. We felt our way along, developing the contractor-Air Force relationship on a day-to-day basis. We are a flexible outfit and all of us can adapt as necessary to get the job done."

Colonel Bumm also clarified the term "management" which is widely used throughout AFBMD, particularly as it is applied to the engineers managing the satellite tests. Their job is to know the program objectives, what is needed to make them successful, when it is needed, and why it is needed. Working closely with the contractor, they have the responsibility of deciding how a particular thing shall be done. It is not a job to be taken lightly.

Concurrency means learning the bird while it is abuilding.

Lieutenant, professor, manager, author Bob Baker typifies young officers with their head in the stars and their feet on the ground.

ALL these people are intensely educated. Many of them have done considerable graduate work in the Air Force Institute of Technology (AFIT) program. They are aeronautical, electrical, and mechanical engineers, geologists, meteorologists, and physicists who are now actively studying astrophysics, astrodynamics, and celestial mechanics.

The same sort of management is done by Air Force people throughout AFBMD, Anam noticed. A young captain at BMD Headquarters in Inglewood, Calif. had described his job: monitor, concur, or veto contracts for specific components or systems. This fellow was an AFIT graduate with four years of R&D background who worked in the Space Booster Directorate. They had encountered problems like fuel sloshing around in partly emptied booster tanks. The sloshing created a torque that threw the vehicle off course. On the next shot they designed and installed baffles that reduced the fuel movement, and corrected for the rest of the malfunction through control jets.

A contractor engineer told Anam how he, other company engineers, and Air Force engineers had solved a problem of placement for one of his tiny telemetry antennas. They simply put it in a fuel tank where it displaced less than a pint of fuel.

Anam talked to another very fascinating young officer at the Inglewood headquarters. He was a starry-eyed first john who doubled as a college professor in mufti. Lt. Robert M. L. Baker had just returned from Stockholm, Sweden, when Anam found him unbusy for a few minutes. Baker had been chairman at a session on Astrodynamics at the International Astronautical Congress there; presented a paper to the body; and talked about science and education with people like Russia's Lenoid I. Sedov, of the USSR Academy of Sciences.

"The Russians are glorying in their successes," Baker reported. "They have a know-it-all attitude and feel that they don't need to listen to anyone else. Neither do they feel any obligation to pass along any of their information to us or anyone. Therefore, their papers are generalized. They do not deal in specifics as we do in our presentations."

The lieutenant didn't consider the Russian work in astrodynamics particularly well coordinated either. It was developed in certain areas only, and he cited their dependence on optical tracking systems rather than more precise radar observations. Old veteran Anam reasoned that no act of Congress ever authorized any brash, 30-year-old lieutenant to pronounce such judgments. Anam checked up on the kid—and hung his head in shame. He found Bob Baker was eminently qualified for all his jobs and opinions.

Baker wrote his first space paper when he was in the eighth grade. He was voted the most likely to reach Mars by his high school class. At UCLA where he studied mathematics and physics, he walked off with the Physics Prize in 1953; was distinguished AFROTC and Phi Beta Kappa graduate in 1954. In the then-dawning Space Age, Lieutenant Baker shaped his graduate work around astronomy and a new astronautics program. He no sooner had his master's degree than he went to work on a Ph.D. with advanced studies in astronomy, engineering, rocket navigation, astrodynamics, and orbit determination.

Naturally (for Lieutenant Baker, that is), such simple studies didn't occupy all his time, so Baker used a few of his spare moments to write 35 scientific papers that were published during this period. But a guy has to eat too, so during his remaining spare time he worked as a consultant to several industrial firms and accepted the assistant professorship of graduate astronomy at UCLA. Instead of wasting time chasing girls like many college boys, Bob Baker just married the secretary of one of his bosses.

Lieutenant Baker's immediate job with AFBMD is to help organize the command's space capabilities. He is also busy with some new computers, working out better orbit determination procedures. But a couple of his off-duty jobs are almost as important. He has about two dozen young Air Force officers, AFIT types, enrolled in his astrodynamics class at the university. Then there is a group of working BMD officers who attend the night courses he conducts at Inglewood.

Unlike the Russians, Baker has no objection to spreading his learning about. He is a member of 8 or 10 organizations that are dedicated to advancing science into space. He will talk or lecture on his favorite subjects to any audience—scientific, military or civic—who can find time to listen. When there is no audience the lieutenant studies and edits the *Journal of Astronautical Sciences,* a magazine aimed at better understanding of space. Still he and his wife have time for the hectic life of normal Americans. They have a son.

"I consider teaching very important," Lieutenant Baker told Anam. "Astrodynamics should be taught in all our colleges rather than a few. And I think that all Air Force personnel should know a little about it. Our high schools should lay a better foundation in mathematics fundamentals, too. The Russians do this in their senior high schools and also teach some of the basic principles of astronomy. First, of course, we need to train the teachers themselves. We aren't doing this right now. We have no place for them to train."

Anam wondered if the lieutenant was subtly trying to promote sales of a new book that had come off the presses that day. It was the first American text published on astrodynamics. Baker was co-author.

books and scholars . . .

AFTER his talk with Lieutenant Baker, Anam was a little less concerned about the strange items that cluttered the bulletin boards in the corridors of AFBMD. An experienced paper shuffler, Anam felt that he could translate Pentagonese as well as any sergeant major. But the bulletin boards in this new Aerospace Force had him baffled. He still didn't understand notices that said papers titled "Laminar Compression of Boundary Layers in an Electromagnetic Field" or "Radio Astronomy—Windows in the Universe" were available. But now he knew why such notices were put there.

Discreet inquiries had disclosed a technical library. It is owned and operated by Space Technology Laboratories, the civilian corporation that was AFBMD's management partner in the development of Air Force missiles. About 40 people are kept busy researching, cataloguing, and issuing the books and reports gathered from industry, universities, military installations, and other libraries in both this country and abroad. The military and civilian scientists and engineers of AFBMD keep them all dog-eared from use.

All of BMD seems to be steeped in this desire for scientific information. Anam dawdled over breakfast and the Racing Form one morning at a coffee shop near the complex. A slacks-clad young lady—she looked like the type that studies Harper's *Bazaar*—sat at the same counter and ate her lunch. He peeped over her shoulder hoping for a tip from her scratch sheet only to find her reading a magazine story on space technology. He recognized her then. She was a stenographer he had seen in a BMD office.

Anam was still a little worried about Lieutenant Baker's remark about teachers though. Somebody had to teach the people who were going to keep the ranks of this new Aerospace Force filled. He had heard General Schriever make a speech about how management was the key to victory in the technological war. By technological war the general obviously meant what the newspapers call the "Cold War" and "our technological war with Russia."

Six years ago when BMD was established the budget amounted to $4 million. Ten billion have been spent since and this year the budget amounts to about $3 billion. All but five of the 19 current projects are concerned with space activities. This is a lot of money to be managed. The customers—Training Command, using commands, the Department of Defense—all want a usable product for the money.

Thousands of industrial concerns must produce many thousands of components, the brainchildren of their scientists. The pace is not set by technology, General Schriever declared, it is set by management. Brain power must replace manpower. And even the manpower available to ARDC has shrunk, he said. It all added up to close cooperation of the military-industry team to win the technological war. That takes capable individuals on both sides.

Without teachers where would all this manpower with brain power come from? Part of the answer was in a foot-thick file of letters in the Information Office.

"There is a real interest by our young people in science and astronautics," the keeper of the file told Anam. "We are not staffed as well as we should be to answer all their questions."

"Send me information on rockets, missiles, and space" wrote a youngster from New York's Bronx. From Sydney, Australia, came a letter asking for photos of the "*Atlas* satellite circling the earth at present." One persistent individual posted five letters—in Spanish—from Argentina within a few months. Requests range from the kid who wanted space and rocket pictures—"we heard they were free"—to educational material wanted by teachers and clubs. One California ninth grader wanted to know distance and speed of *Pioneer V* so he could set up a timetable to chart the space probe both at home and at school as he had done with *Pioneer IV*.

These curious kids are a vast pool of manpower with growing brain power that needs only guidance. The full truth of Lieutenant Baker's statement was brought home to Anam a few days later.

as the twig is bent . . .

ANAM was talking to a couple of young airmen one evening in a barracks at Vandenberg AFB. They were members of the Instrumentation Squadron that tracks the satellites after lift-off from Point Arguello, Pacific Missile Range. They looked under 20 years old. They had finished tech school and a contractor school. They were in the over-the-shoulder phase of training. That night they were bemoaning guardedly (security, you know) their inexperience that would keep them "off the hill" next day during an historic launching.

"Just think," said the airman second. "All this technology—atomic energy, jet engines, rockets, missiles, television, radar. And everything is made out of electrons that have been here since time began. These electrons have been here forever, we just didn't know what they could do. We are *just now* learning how to use them. I didn't realize until I went to Keesler (Air Force electronics school) how interesting they could be . . ." He was interrupted by an airman third.

(Just a few weeks earlier Col. Paul E. Worthman, BMD Director of Space Systems, had told a select group of photographic instrumentation engineers at the Ambassador Hotel in Los Angeles: "We should be proud of the fact that in the past three years man's knowledge of his universe has increased more than in the centuries between Galileo and Einstein. And we should remain properly humble in the knowledge that no matter how dramatic we make the account of how we moved into space, grandchildren will still ask, with wide-eyed, diabolical innocence, 'Why did it take you so long?' ")

"I didn't learn earlier, either," the airman third said. "My teachers didn't make it interesting. It's like when you give a little boy a set of carpenter's tools. You show him how the hammer pounds nails. The saw cuts boards. The rule shows how long the board is. Bah! So what? Why don't you show the kid a beautiful building? Tell him how it was built with the same tools. Tell him that he can make another building, even more beautiful, with the tools. Then the kid's sawing, pounding, and measuring has a purpose. He's interested."

R. I. Anam thinks that there is going to be some mighty fine satellite tracking done from "the hill" at Point Arguello.

That's when Anam decided that AFBMD is one face of a *new* Aerospace Force. It is made up mostly of curious young scientists who think in parabolic lines and differential equations that become satellites in orbit. They are backed up by young technicians with new knowledge and new tools who tune and adjust the systems. But not all of the people in the command are young men. There is a mix of seasoned officers and noncoms who grew up with airplanes and technology. Men with the practical wisdom to know that one bird in orbit doesn't spell success any more than one missile that blows up on the pad spells failure.

No dreamers, Test Pilot Ritland (above) and Manager Greer (right) are men with a mission.

take it from the top . . .

MAJ. GEN. OSMAND J. RITLAND, commander of BMD, is a man with these qualities. General Ritland is a fighter pilot who "flew the Army Air Mail" back in the early thirties. In the late thirties he was a pilot for United Air Lines. When Hitler started trouble, General Ritland came back with a regular commission and earned a Distinguished Flying Cross as an experimental test pilot who checked out most of the new American aircraft flown in WW II. In between times he helped evaluate captured enemy aircraft.

One of the first military pilots to fly jet prototypes, the AFBMD chief is familiar with the quirks of more than 200 airplanes. He should be. He has spent more than one full year of his 28 years' service at airplane controls. Except for two years in the CBI near the end of the war, General Ritland has spent 20 years in Air Force research and development, including considerable experience with nuclear weapons.

Ritland's Vice Commander for Satellite Systems is Brig. Gen. Robert E. Greer. General Greer wears another hat as director of the *Samos* Project reporting directly to the Secretary of the Air Force. A West Point graduate, General Greer has been a flying instructor, B-29 training officer; taught electrical engineering at West Point and physics at the Air War College. Checked out in both prop and jet aircraft, his career has been liberally sprinkled with operational and staff assignments. He did two tours in the Pentagon, one as design and development officer in the office of the Assistant for Atomic Energy, and another as deputy and assistant chief of staff for Guided Missiles.

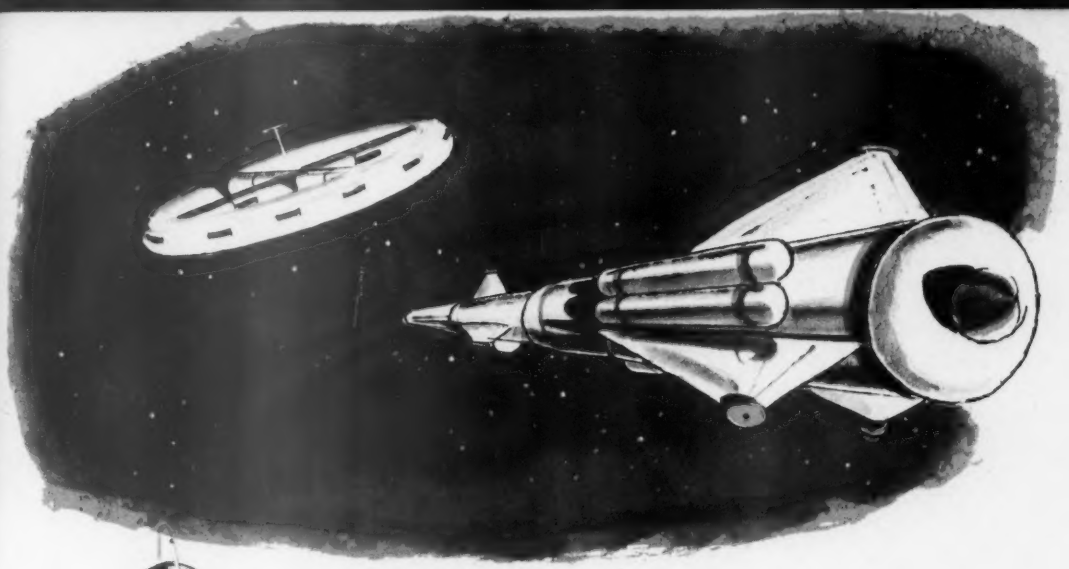
This tall, lean general who doesn't look his 45 years has a unique and important job in the new Aerospace Force: develop America's military satellite capability. He describes the job as an organizational experiment with management schemes that will exercise command and make decisions on satellite systems. With certain innovations it will parallel the rapid development of ballistic missiles by BMD, the parent organization.

Before the first *Samos* shot (it failed to orbit) at Vandenberg AFB, General Greer faced nearly 100 alert newsmen and technical writers. He parried their loaded questions with frank good humor and told them:

"Our main objective in this shot is to get this bird off and in orbit. It has a lot of instrumentation in it. It is unarmed and harmless to any nation on earth. We want to talk to it a little, ask it some questions, and see how it responds. That will satisfy us for now and we will leave it alone up there."

The "what makes it tick" questions he passed to his technical manager, Col. William G. King, Director of the *Samos* Satellite System for AFBMD. Colonel King is a non-flying engineer type. World War II interrupted his education at Kansas University. He promptly returned there after the war and finished his work for a B.S. in engineering. Then he came back on active duty and attended the Army Guided Missile School. In 1954 he got his master's degree in research and development management from the University of Chicago through AFIT.

These men are not idle dreamers nor are they going to be content just to put a satellite in orbit. They want to keep satellites in orbit and keep them working. They are not satisfied with spending the taxpayer's money for satellites whose life of usefulness is limited to the life of their batteries and components. They are not only looking for ways to increase battery life, but methods to replace worn out components. They are giving serious thought to manned space vehicles that can intercept satellites in orbit. The moonlet could be taken aboard the spacecraft, serviced, and returned to orbit. Or, the men would board the satellite and perform the repair work. The project is called SMART for Satellite Maintenance And Repair Techniques.



techniques and technicians . . .

SSGT. RAYMOND D. SCHRADER might be called a typical NCO in AFBMD. He's no engineer, but he knows a lot about computers, the right arms that scientists have traded their slide rules for. When Anam visited the Satellite Test Center last October, Schrader was the only enlisted airman assigned to the automatic control section of the center.

Schrader was new at Sunnyvale then and didn't say much. Like the machines he has lived with for the past eight years, you have to put a certain amount of information in before anything shows up on the read-out. Anam was too ignorant to ask questions that Schrader could answer. Schrader is security-minded and knows AFR 205-1 as well as the IBM that he has taught a thousand airmen how to use. He was an instructor on IBM machines at Sheppard AFB for six and a half years before he went to the test wing.

The computers used at Sunnyvale are "tremendously different" Schrader said, but the principles of operation are about the same. He thinks of himself as a statistician, but he is going to instruct the instructors that Air Training Command will eventually send there to watch him operate these electronic brains as they compute tracks of objects in space.

In a room where the temperature, humidity, and barometric pressure are more carefully controlled than in the National Archives where the Declaration of Independence is preserved, the machines that Sergeant Schrader tends devour bits of data telemetered from the orbiting satellites. The first bits of information come from the launch pad when the vehicle first pulses into life.

As the satellite flashes over the *USS Joe E. Mann*, a Navy electronic tracking ship in the Pacific, it divulges its direction, velocity, and attitude. By the time the bird climbs back up the other side of the earth the computer has told the tracking station at Kodiak, Alaska, where to look for it. Before it can pass over Hawaii, the computer directs Kaena Point tracking station to ask the bird a question like "Where ya swinging, chick?" or whatever they ask satellites.

If the answer isn't right the computers figure out why and tell the bird how to get from Squaresville to the right orbit and what to do there on its next pass over Kodiak. Of course, this is greatly simplified because R. I. Anam is schooled only in Pentagonese and has difficulty with the language of engineers, computers, and beatniks. Maybe the question is popped over Alaska and directions given over Hawaii, despite the fact that Hawaii is the obvious place to ask questions.

Communications technicians change techniques to suit the situation.

stables to space . . .

R. I. ANAM, sentenced to paper shuffling for life, envied Ray Schrader. Altogether, Anam spent a wishful 10 days asking stupid questions around AFBMD. Being an amateur photographer without ever actually reaching amateur standing he was interested in the Payload Processing Facilities at Sunnyvale. He didn't learn much talking to SMSgt. Dick Oltman who is NCOIC of the maintenance section. AFR 205-1 again.

Sergeant Oltman is an old hand in ARDC who spent several years at Edwards AFB helping collect data on aircraft and other equipment being developed there.

Anam did learn that this is a highly specialized group that achieves much higher quality with basic procedures through a new process. If you understand it now, don't talk about it. It is the heart of the *Samos* and *Midas* projects. It may save your life and our nation.

R. I. Anam would have been a radio instructor once if he hadn't demonstrated outstanding abilities for hiding facts in paperwork. This background gave him something in common with another NCO at STC, SMSgt. Dean Peebles. They had another common interest besides radio— horses. Anam had followed them behind a plow. Peebles had groomed them in the 115th Cavalry Regiment. Sergeant Peebles spent seven of his 18 years' service in the old horse cavalry, cleaning stables and grooming horses.

Today Peebles is NCOIC of the Satellite Test Wing's pony express, the communications center. When you are communicating with satellites 300 miles in space you just can't rely on airmail, Peebles said emphatically. When they have a bird circling the globe every 90 minutes or so, the general has to talk fast if the bird is going to get the word. If the message doesn't get through, a precious hour and a half is lost. In a technological war, an hour and a half could be worse than having Geronimo sign a mutual defense pact with Sitting Bull.

Communications is one of the areas where AFBMD has achieved the highest degree of integration simply because no civilian organization had or could afford a worldwide communications network. The control room in STC is the satellite command post. It is one of the most modern communications terminals in the world and fed by one of the most extensive systems. The test controller and test director consoles have closed circuit television screens, push-button communications panels, and speaker-receiver headsets. Other consoles are equipped to tape record all hot-line phone conversations.

Twenty-six TV cameras replace messengers. The satellite and ejection capsule plotting boards can be viewed via television. Incoming and outgoing messages on the 100-word-per-minute teletype systems can be read the same way. Any combination of voice lines or teletype conference lines can be arranged. Vu-Graph screens facing the consoles show current weather conditions, maps, plots, and practically any other information that may be needed.

Time is so critical that the seconds are clicked off electronically in three separate timekeeping systems.

Through the comm center flows the life-blood of this control room.

Sergeant Peebles chased electrons after *Bomarc* missiles from Eglin AFB before coming to the satellite wing. He was the 17th person assigned to the 6594th and has been there for two years now. But he still doesn't have a firm SOP for running his section. The reason is simple, the work isn't.

"Because time is so important," Peebles said, "we are constantly trying new ideas. My people must be able to work on verbal directions and be ready to change to fit any situation that comes up. But they still have to stay within the structure of Air Force communications procedures. It ain't easy and I have to have men that smoke the right brand of cigarettes."

Anam tactfully bummed a smoke and tried to change he subject. He wasn't successful until after he learned hat Peebles had given up horses in disgust to get into he Signal Corps and crypto work. The Air Force and pace communications just came naturally after that. Over coffee later, Anam tried to measure the distance rom a stable to space systems but soon gave up, ascinated instead by the bubbles that electrons were iting from the bottom of his beer glass.

Weather information is a blue-suit job too in BMD. Contractors don't have the means of collecting and ommunicating it. The weathermen have found that he type of information they collect and analyze is bout the same as that needed for *Gooney Birds* and -52s. It's the vastness of the areas in which they col- ct data that is different. That, and the speed of their nalysis. A satellite flight plan needs current weather rom around the globe. They have it at Sunnyvale.

airplanes, wow!...

NEARLY everybody in AFBMD likes his job, Anam found. Maj. John Hatch said that even though it ight take him days to figure out a differential equa- on so that he could apply Kepler's law of equal area equal time to a satellite orbit, he still likes it.

"Mighty interesting," he said. "Sorta makes me feel ke the boys in the old Air Service must have felt ack in the old days when airplanes were new."

Colonel Bumm admitted that he wouldn't want to e anywhere else in the Air Force. There were those, owever, who evidently felt that they were missing omething. Like the two ladies Anam overheard in a us between buildings of BMD's widely scattered com- ex in Inglewood. The two women were employees of erospace, the newly formed nonprofit civilian cor- oration that is replacing Space Technology Labora- ories as the division's management partner. The con- ersation concerned an open house at Vandenberg AFB.

"I was completely fascinated by the airplanes," said ne woman. "Especially that B-52. It was enormous."

"Me, too," answered the other. "But I was worried bout the way the kids were climbing all over it. I saw he little boy chinning himself on the airscoop or what- ver they call that thing in front where the air goes to the engine. He just wanted to see inside. His sister as doing the same thing back at the tailpipe. Trying see him through the engine. You should have seen r dress. She had soot and grease all over it."

"Yeah, I saw that too. I sure hope that pilot checked e plane over good before he flew it. I don't think ey have a countdown on airplanes do they? But ey must check them some way."

"I sure liked that. We all had a good time. Learned lot too. You know, these missiles are all sort of old t to me now. But the airplanes? Wow! I just loved at formation flying. Did you see the one that. . . .?"

Thus a milestone in aerospace history was passed.

short time to fly...

CAPT. ROBERT W. ROY was sitting at his desk in the lower bay of a renovated WW II mobilization-type barracks at Vandenberg AFB. The hard hat that he had worn for most of the past 24 hours was now working overtime as a paperweight. The captain's blue Air Force hat was shoved to the back of his head. He wore a two-day stubble of sandy beard. His coat and collar were unbuttoned and his tie was pulled

Pioneer Rob Roy wants to see what is on the other side of the hills of space.

down. His eyes were red-rimmed from strain and lack of sleep. He didn't look as if he could be enthusiastic about anything. But Anam asked him the same stupid question, "Why do you like your job, captain?"

"Curiosity," the 32-year-old captain said simply. His eyes didn't light up much. The enthusiasm showed only in his voice and in his willingness to talk. As he talked he nervously, sometimes viciously, spun the rotors of a guidance gyro model that he held.

"It's the same thing they called 'pioneering spirit' when our parents were settling the West," Roy continued. "Man is a thinking animal, curious about the unknown, always wondering what is on the other side of the hill. We've run out of hills but we've got space. We don't know what we may gain out there. Maybe a source of unlimited power. Maybe a solution to medical problems—anything. Maybe we won't gain anything except a lot of knowledge about a lot of things on the way. We just want to find out."

It was still yesterday by Rob Roy's watch. Three hours ago he had "pushed the button" on *Samos I*, the first in a series of orbiting vehicles in a research

and development program designed to prove the engineering and communications components of an *Atlas*-boosted, heavily instrumented earth satellite. Roy has probably launched more missiles—about 80, he guessed—than any other person in the Free World. When perfected, the passive, unarmed, completely harmless *Samos* will be a global reconnaissance system that will see much and tell what it sees when the right question is asked.

Launch officer Roy and his crew had spent 12 hours, 33 minutes, and 27 seconds counting it down. It was what they called a "clean countdown." But the bird hadn't gone into orbit. They would try again.

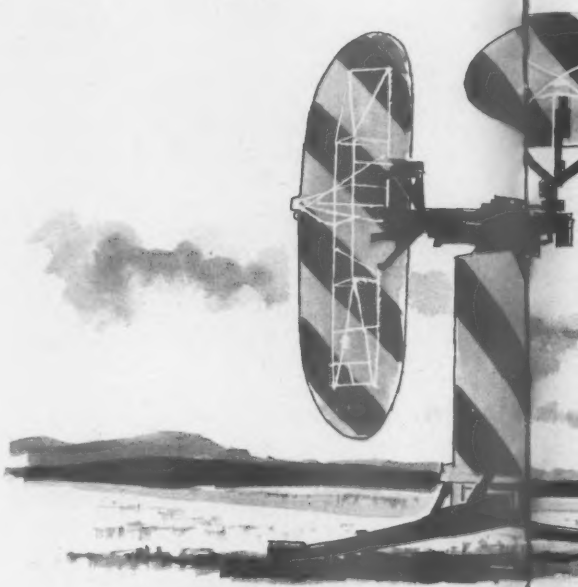
R. I. Anam tactlessly guessed that after 40 or 50 launches, when the launch officer found them getting easy, a failure like this was sort of disappointing.

"Sure, we are disappointed, but they get harder, not easier," Roy corrected. "Because you are more concerned about their going right. We don't have any failures either. These birds have thousands of parts. One of these parts is a weak link. It fails—or it fails to do what we think it should do. We find out why, where we were wrong. Then we start over, correcting for it. But we learn.

"You see there's a lot we don't know. We start with theories. A lot of highly qualified people build these theories into a bunch of systems. They instrument the systems heavily. We study the performance data—thousands of bits of information that will tell the whole story. When it's reduced, we locate any troubles and put the fix in the next one. It's better if the first one breaks down so we can put the fix in than to have something fail on the second. Makes it harder to locate our mistakes."

Anam figured Rob Roy should know. He had eight years of experience as a research and development launch control officer. He had started with the *Matador* program at Patrick AFB in 1952, a year after he graduated from the Naval Academy, and chose his career as an Air Force missileman. The extra year had been spent in Air Force electronics and guided missile schools. Three years and 30 *Matador* launches later he had gone to work on the X-17, the Air Force-Lockheed vehicle that helped scientists solve the nose-cone reentry problem. Roy has been in the AFBMD Field Office at Vandenberg for two years now. He launched 11 *Discoverer* satellites before becoming senior launch control officer for the *Samos* Project.

As Captain Roy talked, Anam remembered how it had been that morning. He, Anam, had been one of the birdwatchers perched atop a high hill overlooking the Pacific Ocean and the Southern Pacific Railroad tracks where they cross Point Arguello, the Navy-owned portion of the Pacific Missile Range. Besides a noisy flock of crows, a hawk circled lazily looking for mice routed by a milling throng of newsmen and newshens. Bright orange liaison planes and whirlibirds went about some mysterious business when they weren't escorting one of the many SP trains past the launch site.



. . . and the bird is on the wing

"Let's have a coke, say hello to the wife and kids, then start over again."

THE sun climbed higher in a cloudless sky and sent heat waves shimmering up out of the treeless ravine between the hill and the launch pad a mile and a half away. The gantry crane had been rolled back and the Lockheed *Agena* second stage vehicle, perfectly mated to the Convair *Atlas,* stood starkly against the mountain backdrop. On four of the highest peaks—"the hill"—stood antennas for the frequency interference control, telemetry, tracking and surveillance radars. Tension mounted with the sun as the countdown shortened jerkily. Tension must have been much worse in the blockhouse, Anam thought.

Several times the launch officer had held the count waiting for Range Safety—two officers and an airman—to tell him a "window" was open. Windows were the irregular periods when the railroad tracks were clear of traffic. They were holes to shoot through. Up on the hill Capt. Oliver "Ollie" Fix, a WW II electronics technician in the Navy who had traded his GI Bill for an electronics degree and an Air Force commission, focused radar eyes on empty space waiting for *Samos I* to be born.

Finally the cool sea breeze stopped whipping wisps of fuming liquid oxygen from the top of the poised bird. Suddenly flame licked out from the base, hesitated, then poured out in rivers. For an interminably long three seconds *Samos* sat straining at the tiedowns. Then slowly she rose above the mountain, gathered speed. A low rumble grew to a whooshing roar and faded again as *Samos* lifted cleanly above the mountain, headed toward the mid-day sun.

With awe in his voice someone said prayerfully, "God! Look at that. It's beautiful, beautiful." Someone else chanted, "Go, go, go, go. . . ."

A contrail blossomed; twisted itself into the only cloud in the sky. Two minutes after lift-off the vehicle staged as planned: the burned out boosters separated and left a vee-shaped smoke trail toward the Pacific Ocean. The sustainer engines blinked visibly for a few seconds. *Samos* disappeared leaving behind a wealth of information—its life story told implicitly to bits of metal imbedded in magnetic tapes. Electronic machines and the minds of men in AFBMD would translate the story into meaningful words and numbers that spelled knowledge. R. I. Anam tried to think of a question that wouldn't sound stupid. He listened instead.

"Our work is unusual and so are the hours," Captain Roy was still talking. "If we have to work 16 hours a day, seven days a week, we do it because we are interested in what we are doing. We hope our work is doing some good. On the first launch of a new bird like this we want the most experienced men we can get, blue suiters and contractors."

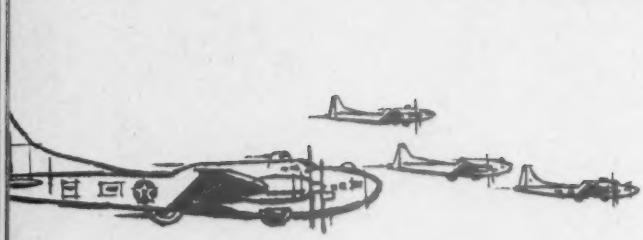
Captain Fix came by on his way over to the MAB (missile assembly building) to "look at that thing."

"It looked good from my side of the fence but those people (the contractors) know the bird," he said.

"Wait, Ollie, I'll go with you. Then I'm going to the club, have a coke and go say hello to the wife and kids. Unless. . . .?" Roy looked questioningly at Anam. R. I. Anam shook his head dumbly without even offering to buy the coke.

In the Name of Congress

NO. 29 IN A SERIES



After several days of bad weather seriously limiting aerial operations, December 24, 1944, dawned bright and clear—ideal for a

COUNTER COUNTERATTACK

by SMSgt. Hal Bamford

At 0530 hours on Saturday, December 16, 1944, the "Ghost Front" of Germany's *Schnee Eifel* erupted. The Battle of the Bulge had been launched.

The week which followed was one of utter frustration for all airpower advocates. Champing at the proverbial bit, they sweated out some of the worst weather in western European history. They were helpless to relieve the beleaguered Infantry.

Only occasionally throughout the entire period did weather clear enough for even limited action. And then, more often than not, the long-silent German air force arrived in droves to ward off the expected counterblows. Hitler's final push was priority-one on German air force protection lists.

Finally, on Christmas Eve morning, the long-awaited clear skies arrived. Air Force planners, determined to break the German offensive's back, swung their alerted crews into action and scheduled an all-out effort. More than 2,000 bombers and nearly 1,000 covering fighters were thrown into the counterassault.

Leading the bomber force was Brig. Gen. Frederick W. Castle, Commander, 4th Bomb Wing, 8th Air Force. He was one of the most qualified, combat-proven air generals in Europe.

Certainly General Castle was no Johnny-come-lately to either the Air Force uniform or aerial combat.

Born in Manila, Philippine Islands, on October 14, 1908, Fred Castle was appointed a Cadet at the United States Military Academy on July 1, 1926. He graduated with the class of '30, went through flying training, and served with the 17th Pursuit Squadron until February 1934 when he resigned. The following May, Castle joined the Air Corps Reserve as a second lieutenant.

On January 18, 1942, he returned to active duty as a first lieutenant. Simultaneously, Maj. Gen. Ira Eaker chose him as one of eight officers to serve on the general's staff and preside at the birth of the planned 8th Air Force.

Within less than two months, this chosen group had arrived in England. Frederick Castle had been twice promoted and now wore the gold oak leaves of a major.

He assumed the duties of A-4, 8th Bomber Command, forerunner of the famed 8th Air Force. In this capacity, he was responsible for the planning of the elaborate system of air bases, overhaul depots, and supply installations which would eventually dot the English landside.

So efficiently did he perform his task he was promoted to lieutenant colonel in September and, by the following March, donned the eagles of a colonel.

In June 1943, his planning job now completed, Colonel Castle assumed command of the already veteran 94th Bombardment Group. However, the fact that he was coming from a staff position to command a combat-tested unit did little to endear him to the organization's men in advance.

As far as these airmen were concerned, Colonel

Castle would have to prove himself and, from the very beginning, this is precisely what he did.

Lt. Col. John Walters, then a member of the group and currently Commander, 392d Missile Training Squadron, Vandenberg AFB, Calif., vividly remembers his first few weeks with Colonel Castle.

"None of his early actions were calculated to make him a popular commander. He established procedures for training and indoctrination, demanded headquarters-type dress of everyone as well as general conduct and discipline which were considered of the noncombat-area type."

His first mission with the group disclosed that he believed in similar discipline throughout the strike. More important, however, it revealed that the new commander was not a combat rookie—this was his ninth sortie—and his conduct under fire confirmed that he had learned his lessons well.

As a result of the improved situation, the 94th soon was marked as one of the top bombardment organizations throughout the area's American units.

Simultaneously, as the combat efficiency of the group increased, the respect for their commander also soared. However, his subordinates were not the only Americans in England who were keeping an eye on this rising young commander.

On April 14, 1944, less than 10 months after he had assumed command of the 94th Group, Colonel Castle was placed in command of the 4th Combat Bombardment Wing. The following November, Frederick W. Castle became a brigadier general. He was 36 years old.

As had been the case during his tenure with the group, General Castle's new position did not deter him from leading his organization on "all the tough ones."

During the months that followed, his combat-mission total reached 29. By the same criteria, respect for his ability to lead on the roughest of missions also reached a pinnacle.

Thus it was that he was selected as leader of the massive force which was scheduled for the key counterblow of December 24, 1944.

The action which led to the award of the Medal of Honor is graphically related in the citation which was published on February 28, 1946. General Castle's Medal was the 39th in Air Force history, the 34th of World War II.

He was air commander and leader of more than 2,000 heavy bombers in a strike against German airfields on 24 December 1944. Enroute to the target, the failure of one engine forced him to relinquish his place at the head of the formation. In order not to endanger friendly troops on the ground below, he refused to jettison his bombs to gain speed and maneuverability. His lagging, unescorted aircraft became the target of numerous enemy fighters which ripped the left wing with cannon shells, set the oxygen system afire, and wounded two members of the crew. Repeated attacks started fires in two engines, leaving the Flying Fortress *in imminent danger of exploding. Realizing the hopelessness of the situation, the bail-out order was given. Without regard for his personal safety he gallantly remained alone at the controls to afford all other crew members an opportunity to escape. Still another attack exploded gasoline tanks in the right wing, and the bomber plunged earthward carrying General Castle to his death. His intrepidity and willing sacrifice of his life to save members of the crew were in keeping with the highest traditions of the military service.*

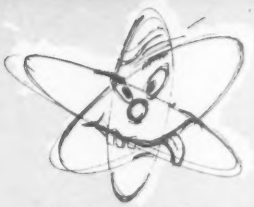
Brig. Gen. Frederick W. Castle

The respect and admiration for General Castle and the sense of loss which followed his death are reflected in the tribute which is emblazoned on a plaque in front of headquarters at the California base named in his honor.

Written by Beirne Lay, a WW II associate and one of today's outstanding authors of air literature, the tribute reads in part, "The heart is torn of late by almost daily reports of heroes killed in action: Botcher, Preddy, and now Castle.

". . . Many of these officers have risen quickly to high rank because of their ability as staff officers. Others have won stars as combat leaders. Castle was outstanding as both a staff officer and combat leader.

". . . No man can say how far it is to the top of the sky. But those who have fought the enemy in the blue upper levels where the vapor trails form and where mist between life and death is thin, believe that men like Castle fly at that high altitude from which none return to earth."



THOSE CRAZY, MIXED-UP ATOMS

Atomic physicists are discovering zany antics in the once-respectable House of Matter.

As the stuff that makes up the world of things, matter once had a look of solid respectability. But modern physicists have discovered that its basic building block—the atom—is nothing but a bundle of energy particles whose behavior can be eye-poppingly bizarre.

These fundamental particles may fall up instead of down. They may vanish in a poof of pure energy upon meeting one another. They may weigh more outside an atomic nucleus than inside.

The atomic never-never land where these high jinks occur is unimaginably small, the National Geographic Society reports. Its giants are neutrons and protons, yet it would take 10 to 15 quadrillion of these particles to measure one inch. The neutrons and protons cluster together in the center of the atom to form the nucleus. Around the nucleus spin even tinier particles—electrons—like planets whirling around the sun.

Carry Electric Charge

Electrons carry a very weak electric charge. The charge is so small that it would take three billion billion electrons to equal the amount of electricity that a 50-watt electric light bulb uses in one second. The charge on electrons is negative. Protons are positive, neutrons neutral.

Besides charge, fundamental particles differ in mass. An electron, for example, weighs only about one 2,000th as much as a proton. Particles also vary in magnetic properties and direction of rotation.

An atomic particle may weigh more outside the atomic nucleus than inside, because, inside the nucleus, part of its mass becomes the force necessary to bind it to the nucleus. This ability of mass to become energy and vice versa—the phenomenon that made possible the atomic bomb—is basic to understanding the weird behavior of fundamental particles.

The equivalence also explains why—in the atomic world—two plus two equals less than four. The difference is the pure energy into which matter may disappear.

Even more startling is antimatter—particles which are like ordinary

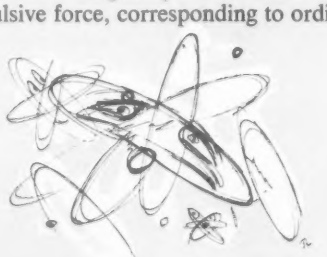
particles except that they are opposite in electric charge and have the ability to annihilate ordinary matter. The electron has its antimatter counterpart in the positron; the proton in the antiproton, and the neutron in the antineutron.

Antimatter Bombs Doubted

When matter meets antimatter of the same type, they both disappear in a tremendous flash of pure energy. Physicists do not foresee antimatter bombs, however, because so much energy is required to make antimatter that it wouldn't be worth-while.

Antimatter can exist only momentarily on the earth, but physicists have speculated that there may be whole galaxies of antimatter somewhere in space. Astronomers are now searching for evidence of them. But man has little hope of landing on an antimatter planet. If he did, his spaceship would immediately vanish into nothingness.

Besides antimatter, National Geographic said, physicists have discovered antigravity. This is a repulsive force, corresponding to ordinary gravity, an attractive force. An antigravity particle will fall up from another particle since it is repulsed by the other particle's gravitational field, instead of being attracted.



Antimatter was predicted about 1929 by the British physicist P.A.M. Dirac on the basis of mathematical calculations he made while working with Einstein's theory of relativity. Dirac's theory was roundly criticized at first, but criticism stopped abruptly in 1931 when an American physicist, Carl Anderson, of California Institute of Technology, confirmed the existence of the positron, an antimatter particle predicted by Dirac. In 1955 other Caltech scientists verified the existence of the antiproton.

Confirmation of antimatter's existence after its prediction by theoreticians was paralleled by the discovery of the neutrino—the tiniest known particle of matter.

New Particles Expected

Physicists have discovered several other important particles, including mesons (particles that outweigh electrons, but are lighter than protons) and hyperons (particles that are heavier than protons). And the end is not in sight. Scientists forecast the discovery of particles that consist of nothing but energy and momentum.

Besides searching for new particles, physicists are working to understand nuclear force—the tremendous power that holds protons and neutrons bound into the nucleus of the atom. This force, the greatest in the universe, enables the sun to pour out in space every second an amount of energy equal to a dozen quadrillion tons of coal, National Geographic estimated.

A few years ago physicist Hans A. Bethe pointed out that the study of nuclear force had consumed "more man-hours than have been given to any other scientific question in the history of mankind." But scientists still don't understand it.

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Airman

Clues from your Calendar

FEBRUARY is a month of more than passing significance for the Air Force because it contains the anniversary of a $25,000 contract granted in the long ago. It also witnessed the first salute another nation accorded the Stars and Stripes of the Revolutionary United States on the banner's appearance in overseas waters. And for Americans as a whole it is a memorable month for the birthdays of two immortal Chief Executives — although not too many people are aware that orderly events in space caused one of these birthdays to be redated.

To give the Star Spangled Banner its due priority, the flag was first sighted from a distant shore on a Yankee privateer in the Bay of Biscay off Quiberon, France, and received its maiden salute abroad from the shore defenses there. This was on February 14, 1778, almost three years before the surrender of Cornwallis at Yorktown. As the romantically minded will have noted from the date, the salute came on St. Valentine's Day.

Now for that $25,000 contract. The War Department signed it with the Wright brothers on February 10, 1908, for the construction of the country's first military aircraft. So suspiciously was the flying contraption concept then regarded by most who had heard of it that chances of getting the Congress to vote an appropriation evidently were considered dubious, hence the money came from a special Presidential fund.

It may be hard to believe today but knowledge of the Wright's success at Kitty Hawk in 1903 was scarcely widespread then so long after. "Hap" Arnold, a member of the West Point's Class of 1907, used to recall that he graduated without ever having heard of those first powered flights which had taken place during his plebe year.

No such ignorance is prevalent, of course, about February's two great birthdays—Lincoln's on the 12th and Washington's on the 22nd. But what's this about Space events causing one of those dates to be reshuffled?

It happened in the case of George Washington, whose birth record gives the date as February 11, 1731. Not until 1752 did the anniversary move up to February 22. Let's see how this came about.

The important first phase in the evolution of the modern calendar was the work of that ancient Roman notable, Julius Caesar. When he came to power, the calendar situation was chaotic. Hence, with an early astronomer to advise him, he set to work on a series of reforms which led to the introduction in 46 B.C. of a calendar in which the length of a normal year was fixed at 365.25 days, the fraction to be used for adding an extra day every four years—the familiar leap year arrangement.

This is the Julian Calendar, so called for its originator, and it continued in use with the advent of the Christian Era. However, it had a hidden fault—as calculated, the length of the year was 0.0078 day more than it should have been by the astronomical standards involved. Multiply that fraction by centuries and it ceases to be as insignificant as it first appears.

In 325 A.D. one of the early church councils of Christendom took up the question of establishing uniform observance days for a number of religious feasts whose dates were fixed with relation to Easter Sunday, itself a moveable feast. It was decided that Easter should be celebrated on the first Sunday following the first full moon after the spring equinox. For this equinox date March 21 was selected—a day since popularly regarded as the first day of spring.

Then the passing centuries and that trivial fraction of 0.0078 day took over their slow intervention. By 1582 the date when the spring equinox occurred astronomically had slipped back to March 11. To get the equinox back to its approximately correct date, Pope Gregory XIII suppressed 10 days that year and made some other modifications in the Julian Calendar to prevent any recurrence of such slippage.

The introduction of the Gregorian Calendar met at first with only limited acceptance. This was the century of the Reformation and in European nations or their colonies the religious upheaval bore heavily on national policies and decisions. The new calendar was adopted by all Catholic countries but only a few Protestant ones; the

others rejected it and continued to use the Julian Calendar.

International trade in the Old World continued, of course; so did diplomatic communications, commercial and other correspondence. With the parties involved in these exchanges using different calendars, the affairs of state, of mercantile interests and private individuals were scarcely facilitated and confusion grew.

By 1752 Britain found that by the Julian Calendar she had fallen 11 days behind the Gregorian dates by then in use throughout most of the Continent. For a great trading nation and one of the Old World's foremost powers, this had become an unacceptable situation. A new calendar was adopted, effective with that year.

So it was in 1752 that George Washington's birthday moved up to February 22 by the calendar in official British use. Not only that but the chronological year of his birth became 1732, instead of 1731. Under the Julian Calendar a new year usually started March 25; with the Gregorian, it began on January 1st. This explains why in some reference works the birth date is given both as February 11, 1731/32 O. S., and February 22, 1732 N. S. The initials after the dates stand for Old Style and New Style, respectively, a method introduced at the time of the change to indicate whether the old Julian or new Gregorian system was being used.

Undoubtedly, one February question has been left unanswered in the minds of at least a few curious readers. On which date did George Washington celebrate his birthday? One answer would be both, certainly as a public figure. His surviving writings tell of attending birthday fetes in his honor on February 22 and also on February 11, frequently in the same year. The community of Alexandria, Va., nine miles up the Potomac from Mount Vernon and often called his "home town," had birthday receptions for him on February 11 for it held to "Old Style" for gala occasions. (One year that date came on a Sunday, so the Alexandria observance was held on Monday, the 12th.)

How about when the general found himself back home at Mount Vernon? There, according to the most exhaustive biographers of Washington, after New Style came in the 22nd was "the date usually observed as the general's birthday."

Now to cull a variety of shorter but noteworthy items which February has seen added to the rich assortment in the nation's chronicle, not overlooking a sampling of some which figure in the Air Force story.

For the first and only time in U. S. history a tie in the presidential electoral vote put the decision up to the House of Representatives which, on February 17, 1801, after days of discussion and 36 ballots, picked Thomas Jefferson as the third man to hold that high office. In the electoral college tally he and Aaron Burr had tied with 73 votes each. Under the prevailing election machinery, Burr became Vice President because this office then went to the presidential candidate who was second in the total of electoral votes. This tie election led to the constitutional amendment providing for separate balloting for President and Vice President.

As any Texan will verify, on the 23rd of the month in 1836 began the celebrated siege of the Alamo, which was to make that old mission building the cradle of liberty for the Lone Star State. A weapons fancier may be prompted to note that exactly two days later Samuel Colt obtained his first patent on the revolver which was to figure so prominently in the winning of the West (also later-day horse operas). On the 15th in 1898 the battleship *Maine* was blown up in Havana harbor. And the recent change in the U. S. flag is a reminder that on February 14, 1912, Arizona became the 48th state to join the Union, the last admitted before Alaska achieved statehood in 1958.

Not to be overlooked are two valuable contributions to the cause of general public health which were made during this month by military medical officers. In 1881 on February 8th the Army Surgeon General discovered the pneumococcus germ, cause of lobar pneumonia. In 1901 on the 6th Walter Reed succeeded in proving that dread yellow fever was transmitted to its victims by a mosquito.

For the Air Force, preoccupied with big missiles and its mission responsibilities in the Space realm, past Februaries yield some salient milestones. In 1958 all these events came in the year's second month: the first successful launch of the *Titan* ICBM came off on the 6th; the next day ARPA was set up to expedite development of "outer space weapons and rockets and other space vehicles"; and the 27th brought the green light for going ahead with the solid fuel *Minuteman* ICBM. On the last day of the month a year later Vandenberg AFB put *Discoverer I* into the first polar orbit achieved by a man-created space vehicle.

To get back to aircraft at length, a military birthday of note merits a verbal bow. On February 4, 1948, MATS came into existence when the WW II Navy and Air Force air transport systems (the old NATS and ATC) merged under USAF supervision.

—WILLIAM A. KINNEY

HASP and the Lonely Ones

It looks like a powerless glider, but it has been where few men ever go.

It was a lonely bird, the U-2. When it squatted on the ramp, isolated from its more sociable brethren, it looked tired and uncomfortable—as though it were in an alien environment.

In the air it was different. Its knife-like, delicate-looking wings gained strength and balance as the rush of the slipstream bolstered their narrow surfaces. They straightened from the characteristic sag they had on

The nose duct of the U-2 is opened in flight to admit air samples to filter.

Pilot of U-2 is debriefed by unit navigator following completion of a high-altitude air sampling operation.

the ground, and as the U-2 became airborne the "pogo sticks" which propped the wings to keep the ship level dropped away. It climbed fast and it climbed high, and sometimes, as it banked to clear the approach zone, men on the ground could catch a glimpse of the silhouetted head of the pilot.

He, too, looked lonely—as indeed he was—for the man and his aircraft had a lonely job. He was borne aloft by his glider-like jet to the stratospheric heights of 70,000 feet. There was little to see there, but much to do.

For three years, the U-2 was an enigma—shrouded in an aura of mystery as it performed the job called HASP, which means High Altitude Sampling Program. From Minot AFB, N. Dak., Plattsburgh AFB, N. Y., Laughlin AFB, Tex., Ramey AFB, Puerto Rico, and from Buenos Aires, Argentina, the lonely pilots in their lonely airplanes performed their solitary and tiring job.

For seven hours the U-2, an unarmed, single-engine, specially equipped jet literally vacuumed the skies of the Western Hemisphere from the Arctic to the Antarctic, scooping samples of the stratosphere into opened nose ports. The air passed through a filter, leaving a residue which was later analyzed to determine the concentration of radioactive isotopes. The Defense

Pilot of U-2 pops the drag chute as the craft prepares to land after another successful mission accomplished.

It's the filter that counts. NCO loads specially developed filter paper into U-2 prior to mission.

Atomic Support Agency (DASA), operating under the direction of Joint Chiefs of Staff, wanted to find out how much Strontium 90, Cesium 137, Plutonium, and other radioactive isotopes had been introduced into the stratosphere by nuclear tests. USAF's 4080th Strategic Reconnaissance Wing supplied the U-2s.

Until it was reluctantly projected into the international limelight, the U-2 was an unfamiliar bird, even to the men at the bases from which it accomplished *Project HASP*. Airmen may have noticed the unusual preparations the pilots made before each flight, but HASP was an unpublicized project. It was generally known that its operations were of a reconnaissance nature, conducted at high altitude, and this probably explained the unusual precautions taken by the pilots.

Before each flight they underwent a complete physical examination. They were briefed by chief navigators, received prepared flight plans and premarked flight cards. After the briefing, they donned pressure suits and helmets which were thoroughly tested for possible pressure, heat, and communication flaws. When their face plates were put on, and until they hooked up with the U-2's oxygen system, the pilots were supplied from portable walk-around bottles.

After the mission, both the pilots and the samples they collected were examined. The latter were removed from the aircraft and mailed to Isotopes, Inc., of Westwood, N. J., for processing and evaluation. The pilots were debriefed and given another physical to assure they had suffered no ill effects from the grueling seven-hour flight at 70,000 feet.

Although the U-2 isn't unfamiliar anymore, it still looks uncomfortable on the ground. It attains its natural grace and gull-like beauty only when airborne, disappearing into the upper reaches of the atmosphere, seeking the solitude it craves and for which it was designed.

—TED R. STURM

MEET THE STAND-IN

by William A. Kinney, *Airman Staff*

THE biggest stack of blue chips in an animal's history now rides with the chimpanzee.

Largely on the biophysical case record he compiles during his scheduled series of short and long sorties from launch-pad into space depends the verdict of experts on that Number One question—the immediate prospects for the safe, successful, and systematic invasion of the new realm by manned orbital vehicles.

A single mission can't produce the extensive information deemed essential—nor even two, or three. In the beckoning new realm beyond our globe, not all conditions having possible effects on man are consistently stable; nor is the phenomena behavior there reliably understood. Hence, the full series of projected flights will be necessary to accumulate the amount of clinical data which top space medicine authorities need.

Duty in the cause of medicine and man is no new assignment for a chimpanzee. In studies covering more than two and a half centuries his species has helped to advance knowledge in this noble science and art to which mankind's well-being today is so deeply indebted.

The current space mission series, however, is easily the most formidable assignment science has given the chimpanzee. The selection of this remarkable animal for the big tests was, of course, inevitable, as experts will tell you. He is the most manlike creature, physiologically, to be found in the animal kingdom, which makes him fairly close to any ideal stand-in for *Homo sapiens*.

Extrovert, jokester, and the conceded "egghead" of all dumb creatures, this native of the tropics is noted for his resourcefulness. More than one human performer in the entertainment world, where the chimpanzee is no stranger, also think the animal is an "act stealer" at heart when he has a chance to get away with it. These people would not be surprised if one of these unusual troupers eventually sensed that the space stand-in role offered him (or her) the act-stealing opportunity of a lifetime.

The chimpanzee is a member of the anthropoid ape family, which makes him a biological relative of such primates as the gorilla, gibbon, and orangutan, but scientists have long rated him superior to any of these kin. He is by far the most intelligent of the lot, and most probably of all the non-human animal kingdom.

His native habitat is equatorial Africa and even in the wild state there he exhibits unusual traits. He spends more time on the ground than other apes but by dark he takes to the trees where he will spend the night on the crude sleeping platform he has constructed high above the surface. The same platform normally won't do for two nights in a row; he prefers to build a new one—and only the extremely young of the breed are exempt from this regular chore.

However primitive this platform-building ability may seem, it hints at an innate aptitude which may explain why these animals can be taught to do a variety of special manual tasks rather readily under human instruction.

At birth a chimpanzee weighs about four pounds. To reach maturity or adulthood requires from nine to a dozen years. A grown male has an average weight of between 115 and 120 pounds; in height, they run about 4½ feet, if measured when standing erect. Comparable figures for the female are slightly less.

(Consider in contrast like statistics for the gorilla,

largest of the ape family. He may reach a height of five to six feet, and tip the scales anywhere between 300 and 600 pounds. Moreover, he is both stupid and inclined to be delicate.)

The chimpanzee wears a coat of abundant black hair and has remarkably large ears, a broad chest, powerful arms and hands sometimes called humanlike. The latter description is somewhat misleading; a chimpanzee's fingers are much longer with relation to the thumbs than is the case with man. Unlike other apes, however, the hands reach only a short distance below the knees.

The animal also comes equipped with a set of teeth capable of inflicting serious injury or damage. However, he is not given to putting them to belligerent use. On the contrary, he is by nature a timid soul who will avoid combat with other animals, as well as man, whenever possible. Nor would the teeth seem essential for coping with a rough dietary routine; chimpanzees normally make their meals of fruit and the shoots of certain plants, with occasionally some insects or birds' eggs on the side for variety or they may find this by raiding plantations where bananas, cane, and cacao are raised.

The unique regard chimpanzees hold as partners in important medical research is due to the fact that physiologically and anatomically they are much closer to man than any of the various tailed-monkey types—the smaller fry of the simian world—which have been widely publicized in recent years for the helpful laboratory aid they have been in man's long struggle to understand and combat human ills.

It was in the second half of the 17th century that a young specimen of these manlike apes came into the possession of a Dr. Edward Tyson (1650-1708) a celebrated English anatomist and surgeon of his day. He made it the subject of intensive study, finally dissecting it carefully. So similar to man's did the physical and skeletal structure seem to Tyson that he believed his subject actually was a pygmy. He thus used the Latin words for "man of the forest" *(Homo sylvestris)* to describe it in medical nomenclature.

Tyson reported the results of his studies in a book published in 1699. One copy is preserved in London's British Museum where it has been on exhibit—and, appropriately, alongside is the mounted skeleton of the young chimpanzee who made the work possible.

During the ensuing century the real ape relationship of the animal was established and in 1788 another scientific name, placing it in that private category, was given it by Johann Frederick Gmelin of the distinguished German scientific family. Around this time the chimpanzee became increasingly well known to European scientists and also to Americans pursuing advanced studies in Old World centers of learning.

To turn now to the contemporary era, chimpanzees have been relied on in biological studies concentrating on behavior phenomena, especially those manifestations where the action of nerve mechanisms is known or suspected to be a fundamental factor.

The chimpanzees recruited over the past several years to help advance the aeromedical and space research programs under the supervision of the Air Force Deputy Chief of Staff for Development's office have all been carefully chosen "on location" in their native equatorial haunts. A premium consideration, understandably, has been to locate prospects which give

Ham, an AF chimp at Holloman AFB, wears space suit while snuggled comfortably in simulated capsule.

Babyface looks pleased as he accepts breakfast of baby cereal and evaporated milk from animal handler Bobby Jo Teal at the Aeromedical Field Laboratory of AF Missile Development Center. Babyface is fussy about chow, wants meals properly prepared and served promptly on schedule.

every promise of being close to the best of the breed.

Once an animal qualifies, he or she becomes the special charge of highly trained Air Force veterinary specialists responsible for a constant check on the "chimp's" well-being, environmental readjustment, and subsequent preparation for its assigned research role. It may be superfluous to note that all this requires the patience, the kindness and understanding to which the higher or more alert animal species will respond. For this reason, the veterinary specialists assigned have been selected not only on the basis of the occupational competence they have acquired but also because they are naturally fond of animals in the first place.

Air Force recruiting is confined to the younger age chimpanzees for possible space flight missions. They adapt quickly to a change in their natural surroundings, are more receptive to training instructions or routine, as well as more retentive about what they are taught, and they evidently experience small difficulty in becoming accustomed to "fraternizing" with humans. In the handling of these creatures, all the rules of the American Medical Association with regard to the humane treatment of experimental animals are rigidly observed—and then some. They get periodic "leave" from the work in which they are involved, time off if they develop signs of fatigue, and "rewards" in the form of a banana or some favorite tidbit for good behavior and cooperation.

The Air Force's accent on youth in chimpanzee recruiting also has another good reason. Between two to four and a half years—the ages of those now in training—the chimpanzee has a weight ranging from 30 to 45 pounds. If held erect, they vary from knee-high to waist-high to the veterinary specialists working with them, so the animals in a sitting posture obviously require very little head room clearance. These compact proportions are physically almost "packaged" to order for passenger capsule occupancy as long as the cubic space available and weight permissable are controlling factors. And this is the case with Air Force on-shelf research vehicles which require 1,000 pounds of thrust for approximately every pound of payload sent up. The weight of the pioneering "chimps," incidentally, may be contrasted with the 164-pound average of the *Project Mercury* astronauts at the time these men were selected.

Adult chimpanzees will have no part in the operation, except possibly as ground-fast rooters. When mature, chimpanzees are inclined to be too set in their ways, independent about doing or not doing assigned chores, and frequently on the hard-to-handle side—traits not entirely unknown in human grownups.

Although the brain of a chimpanzee averages only half as large as that of a man, its relative proportions and structural patterns are considered quite similar. The animal's sensory capacities have likewise been evaluated as close. For memory the chimpanzee gets a high rating, well above that of any other dumb creature, so called.

On the score of intelligence (easily a subject of controversey where animals are concerned), the chimpanzee has some zealous boosters. Some go so far as to maintain that only the lack of speech faculty has kept the animal from acquiring a cultural or social inheritance.

More conservative opinion is content to acknowledge that in certain ranges of behavior and other capabilities there is no doubt the creature can convey quasi-human impressions. For instance, your "chimp" has great curiosity, loves to play, and is remarkably imitative. He can usually express in unmistakable fashion his feelings of the moment—affection, fear, disapproval, anger, contentment or jealousy. He strives to communicate by a combination of inarticulate sounds, changes of posture, plus gesticulations. He can get good volume out of his voice, and his long, piercing cry has been heard as far away as a mile.

The "chimp," incidentally, also has "got rhythm." He will manifest this sense by indulging in a sort of measured dance, the accompaniment being supplied by other "chimps" who drum on trees or other resonant sources to produce a medley of primitive sound.

When sympathetically handled, the young of the breed are docile, gentle, and highly responsive to kindness. ("Not mean, ornery and unpredictable like the tailed monkeys," is the comment of one research specialist who has worked with both branches of the simian family. " 'Chimps' can get under your skin.")

This is not to suggest that the behavior of laboratory-raised chimpanzees is uniformly perfect. Some have been known to fill their mouths with water and then spray it on an approaching attendant who had incurred their displeasure. There are tales of others who take seeming delight in hiding objects just before technicians need them. Whether this sort of thing indicates a vestige of a sense of humor or is imitative of human horseplay observed is a question for the future's super-experts to answer.

The "chimp's" visual memory—often termed amazing—undoutedly is a major factor in explaining his readiness to learn how to perform a set of mechanical operations, such as could convey information from an orbiting nose cone. Perhaps, too, centuries of building sleep platforms have left them instinctively conditioned for manual chores, even with a trace of ingenuity involved. Without coaching they have shown they could figure out how to get food beyond their reach by piecing sticks together or by piling up boxes and anything else handy to achieve the same purpose. If they can't do a thing one way, they persevere trying to find another method.

Obscurity shrouds the date the first chimpanzees arrived in the U. S. They've been around for many years, of course, first delighting circus-goers and visitors to early zoos. Some rather antiquated airmen can remember them as veteran troupers when vaudeville was in its heyday. Then they invaded the movies, and in more recent years demonstrated they could be as natural and engaging before TV cameras. And always they were good performers, riding bikes, eating with knives and forks like humans, playing instruments and doing easily a lot of other things animals aren't expected to do at all.

Since the advent of the Space Age, the versatile "chimps" have again been very much in the act, although not in any of the glamor roles that make headlines—at least yet. Theirs has been some of the monotonous hard work which had to be done if there was to be a real payoff later. They've whirled around in centrifuges, undergoing G-tests to compile data for use in evaluating man's potential endurance. For the same purpose, they've taken many rides while anesthetized in the rocket sleds utilized by Col. John P. Stapp in his lengthy program of deceleration experiments.

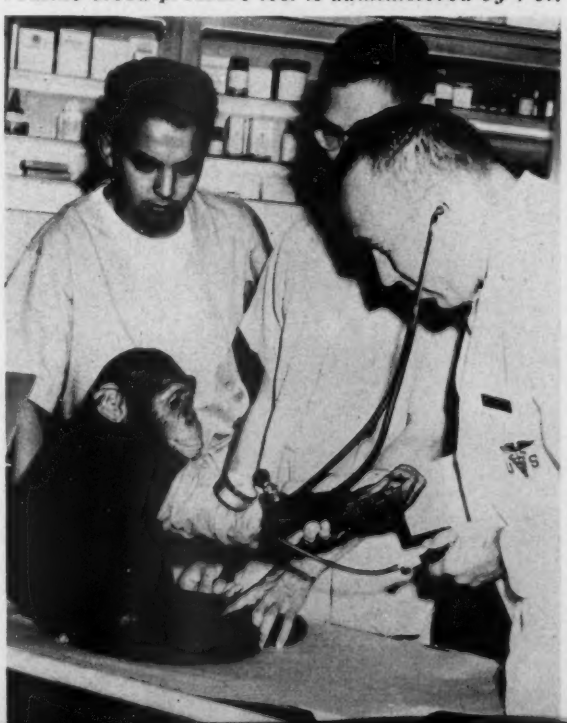
In their rocket sled tour, the "chimps" have found themselves at times sharing a bill with unaccustomed company—pigs, a domestic animal never particularly noted for intelligence or unusual attainments. However, the program evidently had something to learn from pigs, so no temperamental clashes are reported.

The reason the combination has been employed, Colonel Stapp explained to a Congressional committee in this fashion:

"You wonder why I use hogs—hogs and chimpanzees? Well, man is somewhere between the hog and the chimpanzee. Some people are more like hogs; others are more like chimpanzees."

With all deference to Colonel Stapp's observation, the writer's hands-down choice among animals for any space mission is a good, versatile "chimp." After all the creature does come from a long line of proven and adroit performers.

Paleface, youthful AF chimp, submits quietly as a routine blood-pressure test is administered by Vet.



These Things Happened

The crew of an RCAF transport flying resupply missions to Arctic weather stations encountered an interesting experience. Somewhere far up in the north country they picked up an Eskimo woman who was "expecting," and took off for the USAF base at Thule.

The craft was still a considerable way out from Thule when nature decided to wait no longer. As a doctor at the USAF hospital issued instructions over the radio, the crew took the required action and everything proceeded according to SOP. The crew and their C-119 are assigned to the RCAF 435 Transport Squadron. The squadron motto is: *"Certi Provehendi."* It means "Determined to Deliver."

☆ ☆ ☆

Boy Scouts are known for their ingenuity in finding new ways to do a good deed, and five troops at Barksdale AFB, La., hit on a novel approach. There are about 1,500 oak trees growing on the base. On a designated morning 50 Scouts, starting at the base chapel, scoured the ground under the trees and gathered 300 pounds of acorns. The Scouts then proceeded in formation to the Shreveport (La.) Courthouse where the harvest was presented to city officials. It seems that several dozen squirrels romp on the lawns surrounding the courthouse and officials have been forced to dip into the treasury to augment the rations of peanuts donated by citizens. Result: the grounds at Barksdale AFB are free of acorns and the squirrels at Shreveport have supplies for a full season.

☆ ☆ ☆

Engineers at Sembach Air Base, Germany, ran into a real mystery in connection with a stopped-up sewer line. They spent 167 man-hours digging up the pipe and cutting it open. What did they find? A regulation bowling ball lodged in the 12-inch sewer. "The money spent for this job," said the Installation Engineer, "really went down the drain."

☆ ☆ ☆

The coffee break is again being picked upon—this time by experts. Researchers at the University of Michigan Medical Center find that "failure of a coffee break to provide an adequate psychological lift may indicate the break came at the wrong time."

Experiments with caffeine show the stimulant perks up the coffee drinker within 20 minutes which provides a lift for 2.5 hours. But the caffeine in one cup partially blocks the stimulating effects of the second cup. As a result, people who drink coffee with breakfast get no appreciable pickup from a cup of coffee within three hours after breakfast.

☆ ☆ ☆

Capt. Dante A. DeAngelo, USAF dentist at Hahn Air Base, Germany, has been experimenting with what he calls "audio analgesia." The idea is to use sound instead of anesthesia to kill the pain of dental work. After a test try on a willing patient with a standard tape recorder and ordinary earphones he became convinced that sound alone can nullify pain. As the captain explains it, pain is nothing more than nerve waves to the brain. Music or just plain noise can block these waves, and when the waves are blocked there is no pain. In early tests 70 patients submitted to the sound-wave treatment, and 75 percent of the group pronounced the idea a complete success.

☆ ☆ ☆

Air Force emphasis on hard hats, safety shoes, and other tangible and intangible aids to safety is paying dividends. Maj. Gen. Perry B. Griffith, Deputy IG for Safety, USAF, quoted some statistics during the first annual Safety Congress at Riverside, Calif.

During the first eight months of 1960 the Air Force experienced 165 deaths in 80 fatal accidents, as against 256 deaths in 125 accidents for the corresponding period of the previous year. Fatalities from ground accidents showed a decline of 20 percent; government motor vehicle accidents down 11 percent; man-days lost due to injury down 19 percent; cost of injuries down by well over $1 million.

—JOHN K. O'DOHERTY

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Airman

AIRMAN'S WORLD

A "space face" peers down the highly polished steel interior of the Mach-20 wind tunnel which is part of Republic's newly dedicated space research facility.

USAFA'S NEW HOSPITAL *was recently completed and opened to patients. The four-story, 135-bed institution is the next to last major project in the current construction program. Final item is the chapel, scheduled for completion later this year. The stadium is a separate, nonappropriated fund project.*

AN EXHAUST-STREAKED, FADED *American flag recently joined the multitude of exhibits at the United States Air Force Academy Museum. Roughly 28 inches square, the emblem once rode into combat on the side of a WW I* Spad *fighter, flown by Lt. Daniel P. Morse, Jr. Mr. Morse, currently a business executive in Winchester, Mass., and his wife made the presentation to Maj. Gen. Kenneth P. Berquist, who accepted on behalf of the Academy. General Berquist is Commander of the Air Force Command and Control Development Division, L. G. Hanscom Field, Bedford, Mass.*

$100,000 DOLLAR

SSgt. George C. Wilson is a rich man—yet he carried his fortune with him for months before he realized it.

The "fortune" is a freak one-dollar bill which somehow slipped by the watchful eyes of Treasury Department officials and through the fingers of innumerable people who handled it before it reached its current owner.

In 1955, Sergeant Wilson received the bill in change at a small store in rural Maine. Later that evening, he noted the serial number, official seal, and signature were missing from the lower right hand corner of its face. Somehow, the Secretary's name had, instead, been printed on the top border of the back.

Wilson assumed it was counterfeit and took his find to the local police. They, in turn, checked it with the FBI and were informed it was legal tender despite its condition. Wilson decided to keep it as a conversation piece.

However, he shortly began receiving offers for the bill. As the weeks passed, the amount began to climb. Finally, a New York corporation, specializing in such printing freaks, agreed to purchase the bill for $100,000.

Sergeant Wilson, who will retain the bill until the total amount is paid, is currently receiving $10,000 a year, less taxes, over a 10-year period. He will then surrender his find to its new owners.

AIRMAN'S MEDAL

First Airman's Medal to be awarded at Vandenberg AFB, Calif., recently went to SSgt. Harry Budman.

Sergeant Budman was instrumental in preventing almost certain loss of life or serious injury to several fellow employees and, simultaneously, averted the destruction of more than $500,000 worth of equipment.

Employed in a local liquid-oxygen plant, Sergeant Budman discovered a malfunction in a portion of the compressor machinery while performing his normal duties. Knowing that only quick inactivation of the unit could prevent its disintegration, subsequent destruction of the building and adjacent equipment, and death or injury to eight others employed in the building, Budman risked his own life to accomplish the machine's shutdown.

Local officials are certain that only seconds separated the discovery and disaster.

JET BRAKES

An aerial brake that uses jet engine thrust in reverse is currently being tested by the Republic Aircraft Corp.

Designed to be operated by the pilot, the device, if successful, will be utilized without disrupting the aircraft's normal flight contour. It will provide shorter landing rolls, increased flexibility in aerobatic maneuvers, and a decreased turning radius.

Stowed internally for normal operation, the apparatus can be lowered for utilization during both flight maneuvers or when landing. Up to 70 percent of the thrust developed by the aircraft's engine can be diverted into the unique brake. However, in the event of emergency, the reverse thrust channel can be closed and full power regained instantly.

undergo open-heart surgery.

During her recuperation, her "blood brothers" joined Cheri at the hospital to help celebrate her fourth birthday with cake and presents.

RECORD AIRLIFT

Men and aircraft of the 322d Air Division have established what may well be the longest mercy mission in USAF history.

Six Lockheed C-130 *Hercules* recently completed a 6,000-mile, 75-ton lift of emergency medical and relief supplies from Europe to Dacca, East Pakistan, in less than 20 hours following two severe cyclones in the small nation.

Flights departed from both Rhein-Main AB, Germany and Chateauroux AB, France. Supplies included sulfa drugs, anti-malaria

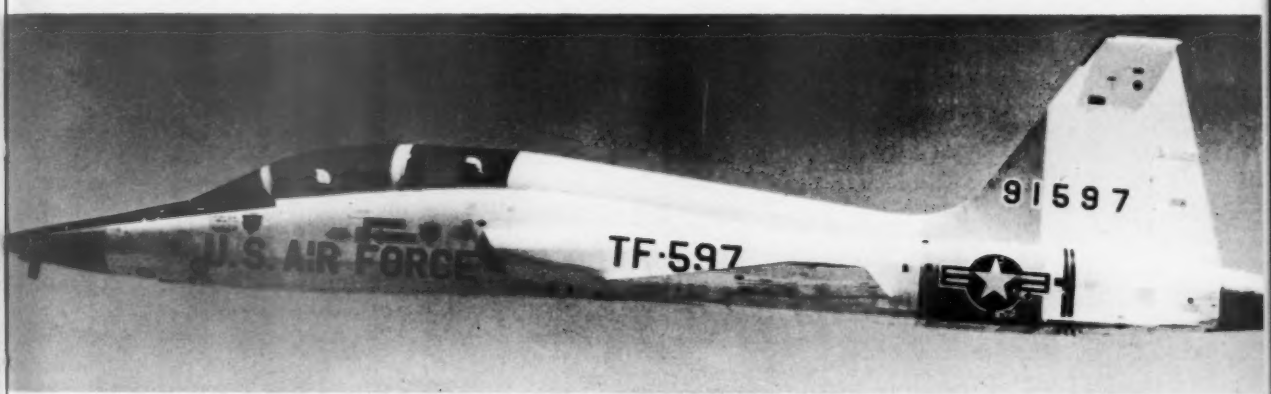
polyurethane substance, which has potential structural applications.

Use of the lightweight substance may allow erection of shelters in a matter of minutes. The material may also be utilized to fabricate internal furnishings such as beds, chairs and lab benches because of reduced gravitational pull. Thus, the need to transport such items can be eliminated in future planning. ARDC scientists, however, indicate the foam will probably be unable to withstand similar weights and pressures on earth.

BOMB ALARM SYSTEM

Officials at NORAD have been charged with responsibility for a new bomb alarm system which is currently being installed across the North American continent.

Strategically positioned detectors



USAF HAS ORDERED *144 additional Northrop T-38A* Talon *supersonic jet aircraft. The latest purchase brings the total now on order to 213. A two-place, light-weight trainer, the* Talon *is slated to become operational at ATC bases within the next few weeks. It will provide aviation cadets with a speedy aircraft, capable of ranges exceeding 1,000 miles, but at low operating costs for USAF.*

BLOOD BROTHERS

Cheri Ann Piersee, impish four-year-old from Shawnee, Kans., owes her life to the U. S. and Canadian airmen at Richards-Gebaur AFB, Mo.

Cheri has long suffered from a severe physical disorder. When her plight was brought to the attention of the men of the 3378th Technical Training Squadron, they volunteered 105 pints of blood so that she could

pills, blankets, and similar donated materials. Water purification chemicals from local military stocks were also included.

FOAM IN SPACE

ARDC officials are predicting that man may be able to set up light housekeeping within minutes after he lands on other planets. Basis for their assumption is a newly developed lightweight plastic foam, a

will report nuclear blasts instantly throughout the new system. Alarms are constructed in such a manner that they would function even if a nuclear device scored a hit in the immediate vicinity of one of the units.

Reports of any nuclear blasts would be channeled simultaneously to SAC headquarters, NORAD Combat Operations Center, and several other undisclosed "decision centers."

BITS OF BLUE

...The Armed Forces Writer's League has revised its membership eligibility rules. Now, any citizen "whose interests coincide with the aims" of the League may apply for regular membership. All regular members are eligible to hold any office except the presidency which is restricted to members of the armed forces.

...Col. Gilbert F. Friederichs is the first non-flying officer ever to command a SAC operational wing. He currently heads the 4062d Strategic Missile Wing, Hill AFB, Utah.

...USAF officials have withdrawn insurance solicitation privileges from two commercial life insurance companies. Agents of American Trust Life Insurance Co., Wichita Falls, Tex., and Western Heritage Life Insurance Co., Phoenix, Ariz., are now barred from Air Force installations.

...The Northrop Corp. has been awarded an ARDC contract for testing a new low-drag, boundry-layer control system. The corporation will conduct extensive flight tests designed to study increased range and endurance of aircraft.

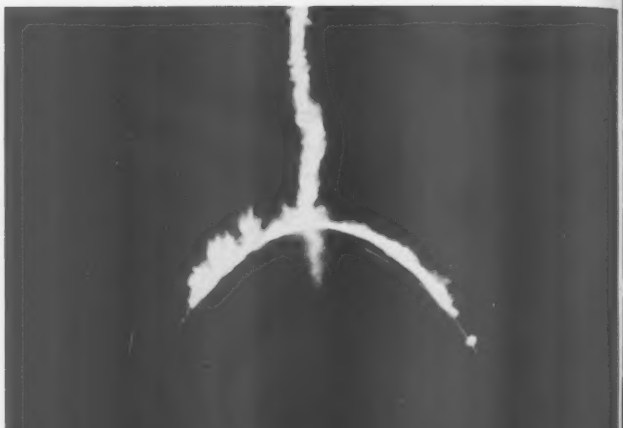
...ECI has reinstated the Officer Candidate School Correspondence Course. Application may be made through local education offices.

...Wright Air Development Division, Wright-Patterson AFB, Ohio, has begun operation of its new $1.25 million space-test facility. Small-scale aerospacecraft will be subjected to tests simulating reentry into the earth's atmosphere.

...At Clark AB, Philippine Islands, a recent Fil-American Day drew an estimated 55,000 visitors to the base. Designed as a "good neighbor" gesture, the program featured flyovers and displays.

...Citizens of Lubbock, Tex., extended the hand of friendship to 29 foreign students studying at nearby Reese AFB recently. They awarded honorary citizenship to the representatives of seven nations.

...*Site Life,* monthly publication of the 759th Radar Squadron, Naselle, Wash., has added a new feature. Comprised of marriage announcements, it is titled *Obituary Column.*



A 1.5-MILLION-VOLT CHARGE *is split and absorbed as it strikes the nose of a Lockheed* Jetstar *radome during lightning protection tests. In order to provide such dissipation ability, four foil strips were cemented to the dome, and anti-erosion coating applied over the entire surface. Such reduction of lightning hazards for airborne aircraft will provide an added degree of safety for crews and equipment during turbulent conditions.*

UNWELCOME VISITOR

Facts and figures on Hurricane Donna are still being sifted in meteorological centers throughout the United States for valuable data to be used in future predictions. But the men on Texas Tower No. 4 would have been just as pleased if she had never been born.

When the tower was erected several years ago, it was placed on three legs which were designed to lift the platform 67 feet above the ocean's surface. Oceanographers had concluded that waves in the immediate area peaked at 60 feet and that these monsters arrived only about once every 20 years.

Then came Donna. She lashed the tower with a total of seven waves which reached heights of 65 feet—and they had a two-way action. Not only did they blast the tower as they moved by but, just beyond, crashed into the local shoals and rebounded to rock the radar site in the opposite direction.

At press time, reports indicate a second storm has resulted in the destruction of Texas Tower No. 4. At the time of the last communication, 27 men were known to be stationed there—12 airmen and 15 civilian repair personnel.

Aerospace Library

PROFESSIONAL READING

The Stackpole Co. has released a publication of special interest to all military personnel. Entitled *Every Serviceman's Lawyer* and written by Earl Snyder, it provides excellent background and guidance for handling legal problems which may arise from your military service. At $3.50, it is a must for every airman's bookshelf.

The *United States Air Force Pictorial Yearbook,* 1960, styled in much the same fashion as school annuals, is also a newcomer to bookstands. It takes a pictorial look at the past, present, and future and provides a breakout on key personnel, commands, and bases. Taylor Publishing Co., $6.00.

USAF's Lt. Col. Lawrence Tacker has authored *Flying Saucers and the United States Air Force.* The book presents USAF's position on the UFO question, based on official Air Force documents. (See *The Official Air Force Position,* January 1961 issue, THE AIRMAN.) Van Nostrand, $3.50.

RELATED READING

Syracuse University press is offering a handy little pamphlet entitled *Memo for Overseas Americans.* By Stuart Brown, it potently defends the American Way of life. In addition to an excellent explanation of "the Permanent American Revolution," it also contains a selective bibliography on American civilization.

Alexis Klotz, former USAF colonel and present airlines captain, recounts his flying adventures in *Three Years Off This Earth.* It is alive with hair-raising tales of escapes and excitement. Doubleday and Co., Inc. $4.95.

If you've ever wondered about the reasons for air crashes, *The Probable Cause,* by Robert J. Serling, should answer many of your questions. It is built on investigative case histories of some of the country's worst air disasters. Doubleday and Co., Inc., $3.95.

HISTORY

This Was Air Travel, Henry R. Palmers, Jr., is an excellent example of the photo-journalism approach to aviation history. Every fancier of the "flying machine" will enjoy this dramatic picture of a fabulous era. Superior Publishing Co., $11.95.

ROCKETS AND MISSILES

Dr. Albert Parry, recognized authority on Red space efforts, has authored *Russia's Rockets and Missiles,* a comparative study of the current status of the East-West rocket rivalry. Doubleday and Co., Inc., $4.95.

You Ask It

Is it true that VA no longer writes any new GI insurance except to service-disabled veterans of the Korean conflict?

No. VA is permitted by law to issue a special type GI insurance to any service-disabled vet, provided he meets certain qualifications. These include the fact that his discharge was on or after April 21, 1951; that it was under conditions other than dishonorable; and that application is made within one year after the date on which VA determines that the disability is service-connected.

Do I need VA permission to sell my GI-loan house if the loan is not fully paid off?

No. However, if you wish to be released from liability for the loan, you must apply to VA.

I pay my GI insurance premiums quarterly and usually get a reminder before the premium is due. This quarter I have not received one. Should I wait for it or make my payment when it comes due?

By all means pay the premium when it is due. Such payments are always the policyholder's responsibility and failure to make them means risking the policy's lapse.

I understand that the total disability income rider on GI insurance has been increased. Can you give me the details?

Recent legislation increased the amount available from $5-a-month-per-$1,000 to $10 at a slight added cost. Your local VA office can furnish details.

Each year I read about the award of special trophies such as Colliers and Daedalian. Can you give me any details on these?

A description of these and other similar awards, including nominating responsibility and procedures, is contained in AFR 35-4.

What is the purpose of the Sample Surveys which are conducted periodically?

The quarterly survey is used to gather cross-sectional information from throughout the Air Force which may be applied to the development of plans and projects, used as a justification for appropriations requests or as a guide in such areas as training, promotion and planning for housing.

Can you outline the eligibility criteria for the wear of the Air Force Guided Missile Insignia?

The rather extensive details are contained in AFR 35-5, dated 18 July 1960.

Where can I get information regarding eligibility to wear the Korean Presidential Unit Citation?

This is outlined in AFR 35-75. Your personnel officer can help you with details.

LETTERS TO THE EDITOR, *continued*

THE AIRMAN. That single copy provided me with a much wider scope of information about the Air Force and this country's defense system and military strength than I had ever attained before. I now begin to understand why we in America and the Free World can sleep in peace each and every night. I have now subscribed to your magazine and would like to express the thanks of one grateful civilian.

Kenneth Lund
Boston, Mass.

★ ★ ★

Dislocation Payments

Sir: In the November issue of THE AIRMAN, in the article *So You Want a Commission and an Education,* the author states that an airman following the Airman Education and Commissioning Program receives dislocation allowances both going to and leaving Officer Training School at Lackland AFB, Tex. Is this correct and, if so, what is the authority for these payments?

SSgt. William B. Harris
Hunter AFB, Ga.

Sir: Would you be so good as to cite the authority for the statement that dislocation allowances may be paid both going to and departing from OTS for AECP students?

Lt. William D. Esters
Stead AFB, Nev.

• *Authority for these payments may be found in AFM 35-11, Part One, Chapter 1, Section L, Par. 35b(1), which reads, "Permanent changes of stations to, from, or between courses of instruction conducted at an installation of the uniformed services or conducted by and controlled and managed by one or more of the uniformed services at a civilian educational institution or elsewhere, are exempt from the one PCS per fiscal year limitation."*

★ ★ ★

The Gooney Bird

Sir: In the article *Never Laugh at a Gooney Bird,* a C-47 in new condition, parked at the edge of a lake in Alaska, is mentioned. Does this bird actually exist and where is the lake?

Sp/4 Donald McPherson
Selfridge AFB, Mich.

• *As was noted throughout the story, many legends exist about the famed and loved* Gooney Bird. *As far as we can determine, this is but another of these many legends. If any of our readers can confirm it, we would be more than happy to receive the information.*

Sir: TSgt. John O'Doherty should be congratulated for the excellent job he did in the November issue in his article on the C-47. Additionally, we would like to say thank you to your entire staff for the continuing excellence of THE AIRMAN and the wide scope of information it makes available to all of us.

A2C Richard Wright
A3C Millard Young
Dover AFB, Del.

★ ★ ★

Bing-Bang Bong

Sir: I always read your publication with pleasure, and in the last issue I was especially happy about the article on Dick "Bing Bang" Bong whom I knew personally for many months when I served at GHQ SWPA and as flight surgeon for Headquarters Flight, Fifth Air Force. No one can paint a picture of Dick as he really was—modest, unassuming, dedicated and superlative in a fighter. I understand a fine memorial has been created to him in his home town. I can only say, whatever it is, it is not enough.

Brig. Gen. Charles H. Moorehouse
APO 925, San Francisco, Calif.

★ ★ ★

Missile Muddle

Sir: Allow me to express my appreciation for the excellent missile roundup you carried in your November issue. However, there are a couple of minor errors in the GAR family section. Those under the fuselage of the F-101B are MB-1 *Genie* missiles; and "The Man and the *Falcon*" should have been identified as "The Man and the *Sidewinder*."

Lt. Col. Gilbert N. Rhees
Olmstead AFB, Pa.

★ ★ ★

Number One Card

Sir: I heard recently that Gen. Curtis LeMay was awarded Russia's Number 1 Pilot Rating Certificate, and that Russia now wants it back. Naturally, he won't return it. Is this hocus pocus or the truth?

SMSgt. William E. Sales, Jr.
Missouri ANG, St. Joseph, Mo.

• *An American does hold this certificate. However, it is not General LeMay, General Thomas D. White, USAF's Chief of Staff, holds the card in question. As to the allegation that the Russians have asked for its return, this is only a rumor so far as we know.*

★ ★ ★

"Soft Core" Request

Sir: I read THE AIRMAN faithfully and would like to ask why you do not publish more articles about men in the soft-core fields? We too are doing an important, if unglamorous, job for the Air Force.

A1C Glenn H. King
APO 239, San Francisco, Calif.

• *A number of articles dealing with the so-called "soft-core" fields have been published by* THE AIRMAN. *We have others in the planning stage. Each and every job is important and scheduled for periodic coverage. However, the huge number of job specialties limits the frequency with which we may cover any specific area.*

★ ★ ★

Suggestions

Sir: Can you tell me if suggestions which are submitted are actually considered for adoption or merely filed in the round file? Several years ago, I made one concerning a slogan and have never even been informed as to whether it arrived at its destination.

SSgt. Ralph H. Schott
Plainfield, N. J.

• *The answer is yes, they most certainly are considered. However, often no answer is dispatched unless slogans or similar suggestions are adopted. The overwhelming volume of this type of mail precludes individual answers unless such positive action is taken.*

Alas, Poor Fighter Pilot

by 1st Lt. Richard Bach

WHAT a change this flying game has gone through! Orville's power kite has barely stopped sliding in the sand, and here we are blasting off from the world like superheated molecules, reaching for the moon. A fellow hardly has a minute to say, "Now those were the days . . ." when *his* days are "those days."

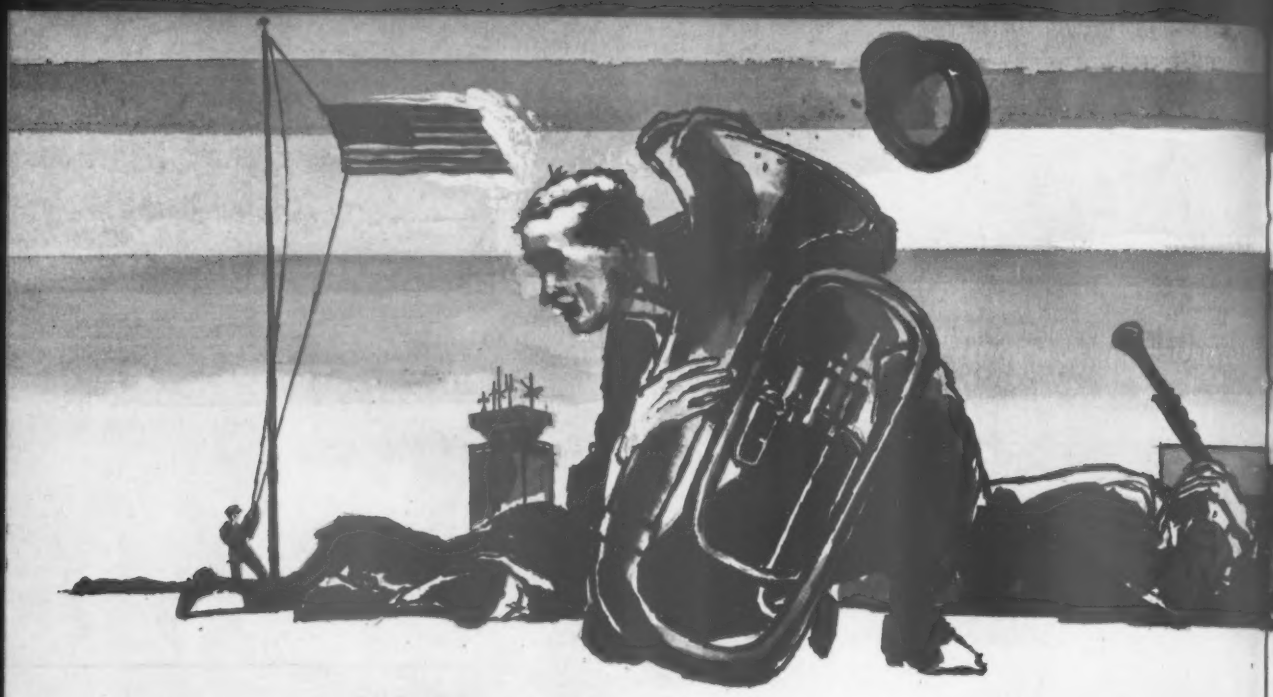
The fighter of World War I steps from his SE-5 saying, "Lillienthal had the right idea. In those days they built their own gliders and taught themselves to fly. Nowadays we fly a noisy machine that somebody else put together and like as not turns into a glider anyway before the flight's over. Those were the days. . ."

Before he can even take off his scarf and puttees, a newcomer jumps down from the rock-solid wing of his P-47.

"McCudden and Richthofen had the right idea," says this one. "If you have to fight a war in the air, you might as well be sporting about it and play skill against skill. Now the Jerries hang around to pick off the cripples and run from a fight."

He can hardly get out of his scarf and B-15 jacket before a fellow just a little younger than he swings down from the cockpit of his F-86.

"Bong had the right idea," he says. "He used an airplane that could turn on a dime and knock down a formation one at a time." He turns to pat his airplane on its smooth nose. "We have a good bird, but by the time you see an enemy coming, he's going."



He unzips his G-suit and loosens his scarf as a huge howling airplane trundles into a nearby parking slot. After a three-minute engine shutdown procedure, the young pilot climbs down a long ladder to the concrete ramp.

"When they fought in Korea, they had the right idea. A fighter plane was a fighter plane, and when you saw the enemy, you pushed the throttle to the firewall and tried to catch him and shoot him down. Now all we do is practice bombing, bombing, bombing. I wonder what it's like to fly a real fighter?"

He has plenty of time to erase his computer board and take off his scarf. No one else talks. The fighter pilots are gone.

"Oh, come now," I can hear you say. "What are all these fast new single-engine airplanes the Air Force is building if they aren't fighter planes? And what are the pilots who fly them, if they aren't fighter pilots?"

Let's take a minute to define what we mean when we say "fighter pilot." By denotation, a fighter pilot is a pilot who flies a light maneuverable pursuit airplane for the purpose of destroying enemy aircraft in the air and on the ground. By connotation, a fighter pilot is a wild fearless tiger in the sky, a person who flies under bridges and does vertical rolls over the base to "motivate the troops" and show the world that he and his airplane can do *anything*.

The fighter pilot, defined either way, put up a terrific struggle for survival before he disappeared.

At an Air Force base in Japan, the struggle was hidden under the mask of competition. Each evening during retreat ceremonies, a single F-86 from one of the base's two F-86 squadrons would fly over the flagpole as the flag was being lowered, lending a stirring finish to the day. The flag-lowering detail noticed that each evening the '86 seemed to pass a little lower, a little closer to the top of the flagpole. It looked almost as if each squadron was trying to prove that it could fly closer to the flag than the other.

One Friday evening, the entire maintenance squadron stood stiff and sharp at attention as the officer of the day ordered the band to play the national anthem and the flag to be lowered. Far in the distance, a tiny smudge of exhaust smoke told that the flyby plane was on its way.

The band had reached ". . . the rockets red glare" when the '86 passed over the flagpole. One cool observer noted that the flag, blowing in a light breeze, turned 180 degrees in the jetblast and flapped for a second as if it were strapped to the mast during a Java monsoon. Every member of the retreat company found themselves flat on the grass, except the tuba player who was trapped in his instrument and could reach only a diagonal position.

From that day on, the flyby at retreat was performed by a four-plane formation, at a strict minimum altitude of 1,000 feet. The fighter pilot had taken one more step toward extinction.

The fighter pilot's airplane, the very reason for his existence, helped him into oblivion. In 1916, a *Nieuport* could barely carry a fighter pilot and his guns to 17,000 feet, and put him where he wanted to go at 110 m.p.h. This was the best that the technology of 1916 could produce, but it didn't begin to match the demands of the pilot. A fighter pilot fought his battles with his soul and his spirit as much as with his equipment. He knew what he wanted to do, and only his equipment prevented him.

Take that *Nieuport*, for instance. Its pilot could be the most fearless human being since Alexander the

Great, and have an overpowering desire to destroy the *Fokker* 10,000 feet below him. But his spirit, eager as it was, was held by the limitations of his airplane. The natural, straightforward solution to his situation was to roll over, point the *Nieuport's* nose straight down, and scream up behind the enemy with all two machine guns blazing. But he had to hold his breath, practice a few profanities, and guide his airplane gently down, knowing that if he gave in to the temptation to power-dive, the fabric on his upper wing would strip itself away and he would wind up pulling himself out of a hole in the ground.

The next war brought the fighter pilot nearer himself. The big Merlin engine up in the nose of his *Spitfire* could snap his spirit along at 400 m.p.h.; eight 30-caliber machine guns could rip an enemy airplane to pieces in a second. But still the equipment wasn't good enough. There, at two o'clock low is the enemy, four tiny black dots against white rolls of cumulus. Even 400 m.p.h. and the slash of wind across the canopy is creeping while the dots wheel slowly into the safety of the cloud.

The last war for the fighter pilot gave him the best airplane that had ever been built for war. The F-86 could just outrun sound in a dive. It could roll faster than any other airplane in the world. It could fight. But high over the hills of Korea came the first glimpse of the end of the fighter plane and its pilot. At 40,000 feet into the deep blue, you can see approximately 160,000 miles of empty air. It isn't easy to see an enemy airplane with a wingspan of 36 feet in all that area. If the enemy chooses to keep out of the fight, he could do it by simply turning around and flying away. Turning radii at high speeds are so great that a fight could be over anyway after one pass and a turn.

The pilot who last squeezed the red trigger of his machine guns over Korea is unknown. Unlike McCudden and Richthofen, history will never mention his name and tell his deeds, but that man was the last free fighter pilot in the history of the world. Ironically, the perfect fighter airplane has now been built. It finally matches the spirit of the man who flies it. When he pushes the throttle forward, the machine will accelerate through the speed of sound going straight up. There is no red line on its airspeed indicator. The only limit to its speed is the temperature of its metal in the friction of the air. It can roll faster than the F-86, fly more than twice as high as the maximum ceiling of the '86. But from its altitude, a pilot can see 360,000 miles of air. And the enemy's wingspan is down to 25 feet.

The heat-seeking mind of the air-to-air missile has replaced the tiger-mind of the fighter pilot. Now the single-engine pilot is almost exclusively a bomber pilot, carrying one bomb to one target. If one of the last remaining enemy fighters comes off its field to meet him after he drops his bomb, he must run for home. He can't afford to tarry, for he hasn't the fuel to fight and also to make it home, and he can't dodge a missile.

The fighter pilot is gone. The few to whom so many owe so much live now only in the books of history and the yellowing logs of the old fighter squadrons. Never again will the defense of a country depend upon the strength, skill and courage of a man and his airplane.

But the man who would be a fighter pilot is still around, waiting for the next adventure history will hand him. He won't have to wait long. *Somebody* has to fly the moon rockets.

This is OTS

The new Officer Training School is high-powered and supersonic. Here's how it earns its reputation.

by Dave Karten, *Airman Staff*

TAKE handpicked college graduates, men and women, age 20½ to 27½, with specific technical, scientific, mathematical, or other specialties required in essential Air Force positions. Give them a concentrated 12-week course at Officer Training School in the fundamentals required of newly commissioned Air Force officers. This is the recipe the U. S. Air Force is now using to obtain officer specialists with the know-how to operate an Air Force equipped with supersonic aircraft and ballistic missiles.

Why OTS?

The big step to bring men and women with these qualifications into the Air Force was taken in 1959. The school was designed to provide the Air Force with the services of several hundred of these young men and women each year for a minimum four-year tour after being commissioned. Many of the young men took only a year or two of AFROTC training in college, then had to drop out because of a heavy academic load. They were frequently majoring in fields in which the Air Force needs specialists. Others attended institutions where AFROTC was not available. Among these graduates the Air Force can hope to find the mathematicians and computer programmers; the international relations experts and the linguists; the engineers and the physicists. Only a few of them will become pilots: the Air Force will get most of its pilots from AFROTC and Air Force Academy graduates. It is expected that at least half the graduates will go into research and development work.

The Officer Training School USAF was formally activated July 1, 1959 as part of the Officer Military Schools USAF at Lackland AFB with Lt. Col. Jesse J. Moorhead as commandant.

OTS has basically the same generalized curriculum as other USAF pre-commissioning schools. But the training philosophy is different. Students reporting to OTS find no upperclassmen waiting to throw them into a stiff brace or dish out other forms of "discipline conditioning." Instead of class training, OTS' philosophy is aimed at producing, in the shortest possible time, a career-minded officer with a high level of education and training.

The program was set up for mature young college men and women. Its aim is to develop the "whole individual" by stressing "individual responsibility." The officer trainee is encouraged, within a clearly defined framework, to think and act for himself. Supervision of student activities is held to a minimum so that each trainee has an opportunity to exercise judgment, initiative, and leadership.

The Curriculum

To insure that OTS graduates possess the uniformly high level of military education and knowledge needed by Air Force junior officers for future growth, a generalized curriculum is taught. It prepares the officer trainee to handle the duties and responsibilities of a commissioned officer.

Providing broad background in contemporary international relations are such courses as the one entitled *U. S. in World Affairs*. It gives students an apprecia-

tion of the impact of history, geography, economic structure, and ideology on the determination of national objectives, and develops an understanding of the role of force in meeting these objectives.

In *Aerospace Power* the students study the emergence of air power and later aerospace power as a decisive instrument of national policy.

For the duties facing them immediately after graduation, the students study the military, personal, social, civic, and moral responsibilities of the Air Force officer. These are covered in *Officers' Responsibilities.*

Leadership and Human Relations prepares them for supervisory responsibilities. This course teaches the psychology of leadership and the importance of sound human relations in dealing with others. Application of the knowledge and principles developed in the leadership course isn't confined to the classroom. The Student Organization in the school constitutes a military leadership laboratory in which the officer trainee can demonstrate his mastery of these principles. In fact, less than half the OTS training is given in classrooms.

The *Effective Communication* course reviews rules and principles of effective expression, and factors involved in the breakdown of communication between individuals and groups. It includes written and oral exercises. Current formats of military correspondence and the staff study are used in all the written exercises.

In *Air Force Organizations and Functions* the officer trainees examine the structural and functional components of Air Force organization. They learn the basic principles of management and their application within the USAF.

Military Law covers the purpose, substance, and historical basis of the Uniform Code of Military Justice with emphasis on the principles of its application. The officer trainees also receive instruction in duties of a legal nature such as summary court, investigation of incidents, accidents, loss or destruction of property, or alleged violations of the Uniform Code.

The *Introduction to Astronautics* gives the trainee some idea of his future working area. It includes 20 hours on space and space weapon systems.

Male OTS students take six hours of physical training a week. A modified physical training program for WAF trainees is patterned after the physical education program conducted for women in colleges and universities.

All trainees have six hours a week of drill, ceremonies, and inspections. Here they develop military precision in executing commands, learn formation movements, and practice formations for various ceremonies.

For the women in OTS there is a *WAF Officer Development* course that analyzes the role of the WAF squadron or detachment commander. Part of this training is devoted to personality development, personal grooming, wardrobe planning, hair styling, and the social graces.

Two-Stage Training

The curriculum is designed so that the halfway mark coincides with the graduation of one class and the entry of another. This separates the two stages of training for the class currently enrolled. The initial six weeks at school as a member of the second class prepares the officer trainee for the supervisory positions he will undertake during the last six weeks. These positions and responsibilities in the student organization closely parallel those in the typical Air Force group and squadron organization.

After-class discussion by the instructor in geopolitics. Capt. Leo C. Seale, Jr., expounds on the significance of the major land masses of the world.

The first eight classes of OTS graduated 640 officers equipped with special technical skills.

A highly qualified staff of over 40 officers, airmen, and civilians administer the OTS curriculum. The academic instructors are all college graduates and specialists in the subjects they teach. Each member of the faculty is chosen because of his previous experience, demonstrated ability as a teacher, and his desire for the assignment.

OTS faculty members bring to their students a reservoir of personal experience and knowledge about the Air Force obtained from a variety of assignments. Every effort is made to insure that the students in the OTS program are exposed to the same brand of leadership they are expected to practice after they become officers.

Crowded Schedule

Time is the big factor in the concentrated 90-day OTS course. There is a lot of ground to cover in the three months and every minute counts. The trainee's tight schedule keeps him on the go from 0500 until 2300 hours.

When reveille sounds at 0500 he leaps out of bed and begins room cleaning and assigned barracks detail. After he finishes house-cleaning duties he marches to breakfast. OTS squadrons form on the drill field for morning inspection at 0715, then march to their classes to music played by the OTS band.

Pinning on the bars. Graduates of OTS are appointed second lieutenants, USAFR, for an indefinite term.

At 1140 they fall out, form in flight formation and march to dinner. Sometime every afternoon they have at least an hour of drill or an hour of physical training. Another hour is usually devoted to a specialized subject like career orientation or a talk by a guest speaker. The remaining hour is usually free for the student to get a haircut or go to the laundry. The officer trainee's day ends at 1700. After supper he prepares his studies and gets organized for the following day.

The accelerated three-month OTS program is no "snap course." It's strict and demands a lot from the students. But they are enthusiastic about the program.

Euthemios Hatchion received his B.S. degree from the Northrop Institute of Technology and plans to make aircraft maintenance engineering his career field. He likes the OTS program "because it enables me to receive an excellent training course that will give me a good start toward becoming a professional Air Force officer. I hope to be sent to school in the Air Force for further training."

Duke University football team co-captain George Dutrow didn't take ROTC in college because he had no time for it while attending morning practice sessions and afternoon classes. He feels OTS is "the best designed program for college graduates who wish to become Air Force officers." He intends to make navigation his career.

Daniel J. Price attended Georgetown University for his B.S. in chemistry and Columbia University for his master's degree. "I took AFROTC for a year," he explains, "but didn't continue since I would have been unable to complete advanced ROTC because of my schedule. After working at Oak Ridge National Laboratory for two summers I applied for OTS to satisfy my military obligation in a position where I could best use my talents for the good of our country. My Air Force career field is Communications and Electronics." The list of enthusiastic officer trainees could go on and on.

The 94 men and women of the first class to enter OTS in November 1959 were winnowed from 940 college graduates who had applied through recruiting offices. The ratio of selection of the 81 men and 13 women in the initial class: about 1 out of 10. To make the final selection a board of officers interviewed each applicant after they had run the gamut of questionnaires and written examinations. A career assignment with the Air Force was determined at time of selection.

Selection of OTS applicants is an exacting task. The election board uses the same high standards as the boards that select officers for promotion.

In the eight classes that have been graduated since OTS was established 15 months ago, the school has turned out 640 officers (including 45 WAF officers) who possess the technical skills needed by the Air Force.

As requirements change within the Air Force, the election of officer trainees can be shifted to meet them, thereby assuring the USAF fully qualified officers in specific fields.

OTS supplements the Air Force ROTC procurement program. By opening up commissions to college graduates who didn't take ROTC, the Officer Training School program gives the Air Force a broader base of election to meet its officer requirements.

General Thomas D. White, Chief of Staff, USAF, recently stated: "The world has entered the Aerospace Age—ushered in by technological explosions which have no parallel in the history of man. It is a new era in which the need for educated, well-trained and experienced personnel is more vital than ever before."

Since OTS was established only recently it is perhaps still too early to know for certain how well the Officer Training School graduate will perform as an Air Force officer. But staff visits and surveys made thus far indicate the OTS man is off to a good start toward becoming a quality professional Air Force officer; that he is above his contemporaries in getting proficiency advancement. Already several major commands have made requests for OTS men with special college training for specific jobs.

1/LT Jay H. Johnson declined invitation to compete in Olympics in favor of appointment to AF OTS.

Here are questions frequently asked the USAF Officer Training School and the answers.

"If I am selected for Officer Training School and enter training, what will be my status?

All selected applicants will enlist in the Regular Air Force for a period of two years as an E-1 (airman basic). Upon enlistment, the applicant will be temporarily promoted to E-5 (staff sergeant). This status is retained throughout the precommission training.

My Selective Service classification is 1-A. Am I eligible to apply for officer training?

You may apply for Officer Training School at any time prior to receiving orders from the Selective Service System to report for active military service.

If I am eliminated from Officer Training School, how long must I serve in the Air Force?

Trainees from civilian status will revert to the grade held immediately prior to appointment as an Officer Trainee. Each eliminated student, whose current enlistment was specifically for the Officer Training School Program, may request separation from the Air Force or complete the enlistment contract. Those requesting separation and who have a remaining service obligation will be transferred to the Air Force Reserve.

May I apply for this program if I am married?

Male applicants may be married or may marry during training. Female applicants must be single.

When will I know what type specialized training I will be given after I graduate from officer training?

Each selected applicant will be notified of the type training he is scheduled to undergo when he receives his class assignment and reporting instructions. At that time, the applicant must sign acceptance for training.

Must I complete my entire senior year in college before I can make application for this program?

No. An individual within 135 days of graduation may apply for this program.

I failed the Air Force Officer Qualification Test (AFOQT). When may I reapply?

An individual who fails the AFOQT may retake the test one year from the date last tested.

Are applicants for the OTS program obligated to the Air Force by virtue of applying for this training?

Applicants for this program are not obligated to the Air Force until they voluntarily enlist.

How long must I serve in the Air Force after completing Officer Training School?

Graduates of this training course are appointed second lieutenants, USAF Reserve, for an indefinite term. They will be ordered to active duty for an indefinite period in a career reserve status. However, all graduates of the OTS program incur a four-year minimum active-duty obligation as a commissioned officer. Graduates who pursue further training as pilots or navigators incur a four-year active-duty obligation after the date of the award of their aeronautical rating.

SLANTS ON SPACE

A total eclipse of the Sun is due February 15 but only observers in the Eastern Hemisphere can watch it. The shadow cast on Earth has an initial width of 130 miles; at its midway point the path's greatest width will be 164 miles. The path begins over the Bay of Biscay at sunrise, crosses southern France, northern Italy, Yugoslavia, Rumania, then sweeps in a northeastward arc over the Soviet Union ending above the Artic Circle in Siberia. The total phase will last 2 minutes and 45 seconds, as seen from the vicinity of Rostov on the Don in USSR.

Maximum totality for a solar eclipse is more than seven minutes when its path happens to be at or near the equator, with the Sun directly overhead. Duration of the total phase decreases as the latitudes crossed by an eclipse's path are farther removed from the equator.

As a partial eclipse, the February phenomenon will be visible to watchers throughout Europe, North Africa, the Near and Middle East and Asia, except for the southeastern and extreme eastern portions.

A solar eclipse can occur only at the time of a new Moon, tnat is when the Sun and Moon are on the same side of the Earth.

Neptune, discovered in 1846, has yet to be observed through one complete resolution around the Sun. The planet, which moves at a mean velocity of 3.4 miles per second, requires 164 years, 280 days to make the circuit of its orbit. This means it will not be back in the same celestial spot where it was first sighted until the year 2011. Any wonder that astronomy has the reputation of the science of virtually infinite patience?

True science fiction riddle: The "discovery" of the fact that Mars has two satellites was first recorded by Jonathan Swift in his great classic, *Gulliver's Travels*. He credited the find to fictional astronomers operating on a "flying island" which his traveling hero visited. This book was published in 1726, and the odd thing is that there was then in existence no telescope powerful enough for the best trained observer on Earth to pick up either of the two tiny Martian satellites.

After a lapse of 151 years fact caught up with fiction when Professor Asaph Hall, an eminent American astronomer, did discover the satellite pair, using one of the world's most powerful telescopes of his day and at a time when Mars' orbit brought that planet unusually close to our globe in August, 1877.

To the surprise of the scientific community, when the distances of the satellites from Mars and their orbital velocities were computed, the figures were surprisingly close to those Swift had mentioned in his book! How come? Astronomers can only credit Swift's imagination with incredible luck on what they insist must have been "a shot in the dark," but still none the less a remarkable coincidence.

Another 18th century author, Francois Voltaire of France, also reported two moons for Mars in his *Micromegas*, published in 1752. This fantasy includes the planet among the stops made by its hero, Micromegas, in the course of some extensive space traveling from his native home on Sirius, the Dog Star. This astronaut also visited the Earth, first thought it uninhabited, then found to his astonishment that it was indeed populated, but by a species of extremely minute insect-like creatures. To cap the climax, these scarcely visible things proved to be rational beings of marked intelligence and able to communicate with their visitor from Sirius.

Jupiter, largest planet in the solar system, is a gaseous body with no solid surface, hence "landings" in the accepted sense of that word by future astronauts would seem out of the question. Be-ringed Saturn, second largest in the planetary family, also is a gaseous sphere which has no firm surface footing. Astronomers believe the two planets have invisible solid cores, probably small in relation to the visible atmospheric areas, but there is no certainty from research to date as to what the composition of the cores may be.

The next two of the outer planets, Uranus and Neptune, likewise appear to be mostly gaseous bodies, again with relatively small cores deep in the center of the atmospheric spheres surrounding them.

As for Pluto, the outermost planet, scientific knowledge regarding its nature is still on the limited side but the theory has been advanced that it may be, in the main, a rocky body somewhat similar in composition to the Earth, but with a surface temperature in the most inhospitable order of 400 degrees below zero Fahrenheit.

At the core of the Sun the temperatures generated may reach as high as 27 million degrees Fahrenheit, according to present scientific knowledge, however fantastic such an equivalent of a thermometer reading may seem to an earthling mind. Only a small ration of the enormous energy produced in the center of this average yellow star eventually reaches the Earth indirectly. Temperatures prevailing in the center of stellar bodies are far higher than those measured in their gaseous outer surfaces. In the case of the Sun, the heat energy normally emitted by its surface averages only something more than 10,000 degrees Fahrenheit. —WILLIAM A. KINNEY

From the saddle of a Wild West bronc, "Buffalo Bill" graduated to the pilot's seat of an airplane to blaze new trails in the sky.

THE FLYING COWBOY

by TSgt. John K. O'Doherty
Airman Staff

THE historic air show presented by Orville and Wilbur Wright at Kitty Hawk in 1903 did not immediately usher in the golden age of aviation. As a matter of fact, by 1905 the two bicycle mechanics from Dayton were still the only men in the world who knew how to fly. One reason for this was that the Wright brothers were understandably cautious about sharing their discoveries with the world. They were businessmen, interested in making an honest capitalistic dollar from their invention. They entertained a high regard for such practical things as patent rights.

But in other countries, notably France and England, pioneer airmen were following their own roads in search of the secret of flight. Some of them began to come up with the answers. Beginning in 1906 the international race for leadership in the air age was on in earnest. It is remarkable to note that the altitude record for powered aircraft stood at 450 feet in 1909 and reached to higher than 13,000 feet by the end of 1911.

First man to fly an airplane in England was an American-born namesake of a famous character of the Old West, "Colonel" Samuel F. "Buffalo Bill" Cody. Earlier in his career this Colonel Cody had distinguished himself as a cowboy, bronco buster, and producer-manager of a Wild West carnival show. He approached aviation as a new field to conquer. It is hardly surprising that this adventurous man of action was fascinated by the intense atmosphere of competition surrounding the infant industry.

In appearance, Colonel Cody was rather short and chunky with a long, thick moustache and scraggly goatee. His sense of showmanship and his daredevil exploits made the colorful and picturesque pilot a favorite of British fans at the air shows.

British air meets held on the outskirts of London in the pioneer days were perhaps even more elaborate and spectacular than those in the United States. The Britishers staged pylon races at tree-top level, acrobatic demonstrations, and even comedy flights. Anything to give the customers their money's worth. When he was not in the air, Colonel Cody could be seen standing about twirling the ends of his moustache while he studied his competition.

In addition to his accomplishments as a pilot, Colonel Cody designed and built a number of aircraft which amazed contemporary aviation circles. Some of his radical and astounding innovations were distinguished by superlative workmanship. Carefully shaped spars, specially machined ferrules, and general evidence of precision, were a few.

His earlier models were biplanes, but in spite of his meticulousness to detail they were heavy, clumsy, and unwieldy. One of Cody's biplanes was fitted with four metal plow seats arranged in a row behind the pilot. There was no shelter from the wind, no back rest for the occupants, and very little to hold on to. In this strange contraption Cody carried four passengers on a cross-country flight at 70 miles an hour—a considerable feat at the time.

But other names were coming to the fore in British aviation, names like Claude Grahme-White and Frederick Handley Page. Cody resolved to make a determined bid for leadership in the British Military Trials of 1912. For this important contest the enterprising airman built a special monoplane weighing 3,100 pounds. It was equipped with a 120 hp. Austro-Daimler engine, and showed promising performance in flight tests. Speed was clocked at 83 miles per hour. It looked as though the colonel had a winner.

Three weeks before the big race Cody cracked up the aircraft and nearly killed himself. Landing with a dead engine in an open field, he ploughed into a cow grazing quietly in the sunshine. The animal was killed and the aircraft completely wrecked. Splinters of wood and fragments of good Irish linen were scattered widespread over the pasture.

Cody's efforts did not win immortality for him, but his work was anything but wasted. Like other pioneers of the period, he was exploring, under pressure of extreme competition, in a completely new field. He made some spectacular mistakes, but, unquestionably, others profited by the lessons they portrayed. One thing is certain. He possessed his share of the courage, imagination, and confidence that were needed to get the airpower show on the road.

TROUBLE AT ADAIR

The telephone rang in the office of the Oregon State Game Commission.

"Look, mister," said a harried female voice on the wire, "how do I get this porcupine off the front step?"

The poser of this pointed question was Mrs. Howard M. Larman, wife of the fire chief at Adair Air Force Station, Oreg. And the problem of the porcupine parked on the porch is only one of a profusion of provoking pothers presently plaguing permanent party personnel at the Oregon air defense installation.

Crux of the matter appears to be that wildlife native to sparsely populated west-central Oregon simply refuses to be dislodged even from the small space occupied by the Air Force station. Maj. Aloys W. Fuessell, Jr., returning to his quarters one day, found a plump pheasant perched on his bed amid a swelter of broken glass. The feathered flyer —now frightened and frustrated at finding himself in unfamiliar surroundings—had smashed through screen and window on a low-level mission across the quarters compound. On the same day of Mrs. Larman's encounter with the porcupine, she discovered a pheasant in the garage—and flatly refused to investigate a snuffling noise under her kitchen window.

The area surrounding Adair Station is a wildlife paradise. Fish and game, from elk to quail and from pan trout to big salmon, are so plentiful that even the rankest duffers bag the limit regularly. Deer are so numerous that they destroy farmers' crops, and in frequent "extended seasons" animals of any age or sex may be taken. While Mrs. Larman with her perplexing problem of the pesky porcupine merits general sympathy, Air Force breadwinners appreciate the big difference the situation makes in the commissary bill.

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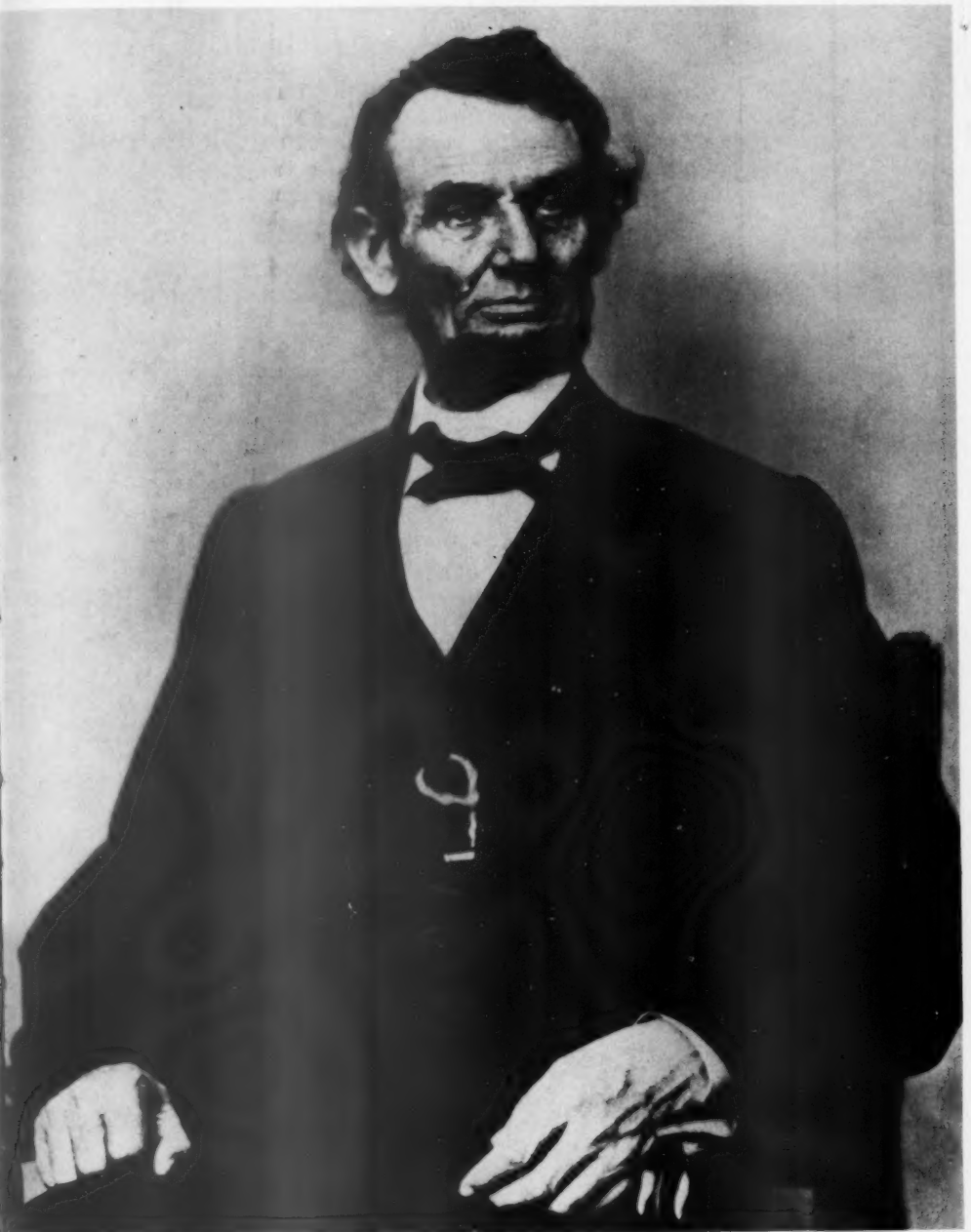
Crux of the matter appears to be that wildlife native to sparsely populated west-central Oregon simply refuses to be dislodged even from the small space occupied by the Air Force station. Maj. Aloys W. Fuessell, Jr., returning to his quarters one day, found a plump pheasant perched on his bed amid a swelter of broken glass. The feathered flyer—now frightened and frustrated at finding himself in unfamiliar surroundings—had smashed through screen and window on a low-level mission across the quarters compound. On the same day of Mrs. Larman's encounter with the porcupine, she discovered a pheasant in the garage—and flatly refused to investigate a snuffling noise under her kitchen window.

The area surrounding Adair Station is a wildlife paradise. Fish and game, from elk to quail and from pan trout to big salmon, are so plentiful that even the rankest duffers bag the limit regularly. Deer are so numerous that they destroy farmers' crops, and in frequent "extended seasons" animals of any age or sex may be taken. While Mrs. Larman with her perplexing problem of the pesky porcupine merits general sympathy, Air Force breadwinners appreciate the big difference the situation makes in the commissary bill.



National Archives photo

Those who Deny freedom to others Deserve it not for Themselves.

A. Lincoln

God grant that not only the love of liberty but a thorough knowledge of the rights of man may pervade all the nations of the earth so that a philosopher may set his foot anywhere on its surface and say: "This is my country."

— Benjamin Franklin